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DIESEL RAILWAY TRACTION

The October issue of this RAILWAY GAZETTE *publication, illustrating and describing developments in Diesel Railway Traction, will be ready on October* 1, *price* 2*s.*

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THE RAILWAY GAZETTE
33, TOTHILL STREET, WESTMINSTER, S.W.1.

Economic Position Improving

WHEN, last week, Sir Stafford Cripps addressed the House of Commons on the balance of payments position as shown in the White Paper, there was rather more optimism in his discourse than usual. Total deficit was shown to have been reduced to less than half the rate for 1947, and exports to have exceeded 140 per cent. of the 1938 volume. Taking the unsatisfactory side of the picture first, imports were £887 million as compared with the £792 million forecast, largely accounted for by higher prices. The volume of imports, indeed, was only 78 per cent. of 1938. Exports earned £26 million more than the £705 million estimate, however, which was mainly an increase in volume. Most hopeful feature was the recovery in invisible exports. Receipts from shipping at £66 million were more than double, and a £28 million income from the tourist industry was higher by £19 million. Though the Chancellor of the Exchequer expressed confidence in the industrial future of the country, there was wisdom in his final warning, for we have a long way to go yet, selling is not getting easier, manpower and productivity are causing anxiety, and international uncertainty always seems to be with us.

* * * *

General Peron on Argentine Transport

Early in July the post of Secretariat of Transport was created in Argentina, and Lt.-Colonel Juan F. Castro was formally installed in the post. At the ceremony, General Peron, the President of Argentina, referred to the history of Argentine transport, which had now passed completely into the hands of the State. When dealing with the transfer of the formerly British-owned railways, he said that some critics accused the Government of having made a bad bargain, but in reality the cost to the country was very much lower than it might have been. He added: "Formerly, the purchasers of our meat paid every year for half of what they consumed. This was because they never paid for their meat in money, but in services rendered in Argentine territory by railways of English capital foundation, and these services represented the other half of the value of the meat. I have never blamed the English for this; they were doing business honourably: those who were doing business dishonourably were we Argentines."

* * * *

No Railway Monopoly in Great Britain

The publication of the Glasgow Municipal Transport Plan (see details in our September 10 issue) provides a reminder of the fact that the Transport Act, 1947, confers on the British Transport Commission no monopoly of rail transport in Great Britain. Not only were some of the smaller railways, including the Liverpool Overhead and the Glasgow Underground, omitted from nationalisation, but also it is still possible in theory for a new private railway enterprise to be promoted. It may be contended that there is very little likelihood of capital becoming available for a new main-line enterprise, and also that the necessary application to Parliament would probably receive powerful opposition from the B.T.C., but it is still far from being outside the bounds of possibility that minor railways might be promoted, particularly in terrain unsuited to road transport, and the Glasgow plan shows that large municipal interests still have ideas (and the legal possibility) of planning urban transport improvements independently of the nationalised railway system. In addition, there are enterprises such as the well-known Romney, Hythe & Dymchurch narrow-gauge railway, which private enterprise may be inclined to emulate elsewhere. This may shortly form the subject of a public capital issue.

* * * *

The Second Longmoor Open Day

Last year, when the Royal Engineers Transportation Centre at Longmoor held its first annual "At Home," some 3,000 visitors were received during the course of the day, and the occasion appears to have been no less successful this September 15, when the second public day was arranged. Primary objects of the occasion are to give the public an opportunity to see how the Army's transport responsibilities are carried out in wartime and how the Corps of Royal Engineers trains the men to carry out these responsibilities. Special emphasis this

year, however, was placed on the R.E. (Transportation) Supplementary Reserve, and General Sir William Slim, Deputy Chairman of the Railway Executive, who is Honorary Colonel of these units, visited the centre during the afternoon. Brigadier R. Gardiner, Director of Transportation and Commandant of the Transportation Centre, made extensive reference to the Supplementary Reserve at a press conference held at Longmoor, and said that these units were to the military transportation service, what the Territorial Army was to the rest of the Army. Statements recently made by the Secretary of State for War and the C.I.G.S., concerning the importance of the T.A. to the nation, were equally applicable to the Supplementary Reserve. We feel sure that the Railway Executive will encourage and make it easy for eligible railwaymen to join the Supplementary Reserve.

* * * *

Handling of Goods "Smalls"

Elsewhere in this issue we print a communication from a correspondent on the handling of goods sundries, or "smalls," in railway goods stations. The subject is of perennial importance, because warehouse costs are a heavy item of operating expenditure, and so far no royal road has been discovered for reducing them. The installation of mechanical appliances is difficult to justify, unless they can be employed throughout the day, and at many stations the bulk of the inward traffic is unloaded in the morning and the afternoon is occupied mainly with the loading of outward consignments. Our correspondent accordingly advocates a system of "perambulation," performed by ordinary cartage vehicles, as being at once effective and economical. This system can be tried anywhere without carrying out any capital work—a tremendous advantage in existing circumstances. We hope the article will arouse fresh interest in the whole question of warehouse working and bring forth suggestions from readers who have practical experience of dealing with goods "smalls."

* * * *

Some Peculiarities of B.B. & C.I.R.

Prior to partition in 1947 there were nine railways in British India operating systems of 2,000 route-miles and over. Also, there were three gauges or groups of gauges, broad (5 ft. 6 in.), metre (3 ft. 3⅜ in.), and narrow (2 ft. 6 in. and 2 ft. 0 in.), but only one of the nine systems consisted of track of a single gauge. Five others had two different gauges, and three had lines of all three gauges. Among these three triple-gauge systems was the Bombay, Baroda & Central India Railway, which on March 31, 1947, worked 1,267 route-miles of 5 ft. 6 in. gauge, 1,982 route-miles of metre gauge, and 152 route-miles of narrow gauge. Unlike other multi-gauge lines, however, the B.B. & C.I.R. had separate administrations for its broad-gauge and metre-gauge systems, each directly responsible in many respects to the general manager, and each with its own headquarters. Another peculiarity about the B.B. & C.I.R. was that for several decades it, alone among Indian lines, had built some of its own metre-gauge locomotives at Ajmer shops. Of recent years those shops have been turning out a few locomotives of both gauges for other railways. Several of the B.B. & C.I.R. types of metre-gauge engines are distinctive* and unlike those standardised for other lines in India and Burma. An article descriptive of this railway appears elsewhere in this issue.

* * * *

High-Speed Renewal of Formation

Modern mechanical equipment played an important part in the recent renewal of the formation under the up and down main lines of the London Midland Region at Denbigh Hall, near Bletchley, 48 miles from Euston. A serious slip on the west bank of the cutting, in 1940, had made the tracks unstable, but it was not possible to rectify this trouble completely until the summer of this year. The work of excavating the waterlogged material for a length of 220 yd., and of providing a blanket of sand and gravel under the new ballast, was carried out during a 49-hour absolute occupation of the main lines, and is described in detail elsewhere in this issue. Traffic was diverted to the slow lines while the renewal was in progress. A highly-detailed programme was drawn up at a series of meetings arranged by the Engineer's Department; and great care was taken to ensure that all concerned were familiar with the arrangements. The renewal was completed successfully between Saturday, July 10, and Monday, July 12. Special lighting equipment was provided for night work.

* * * *

P.W.I. Visit to Sandiacre

Some 200 members of the London, and the Liverpool & Manchester Sections of the Permanent Way Institution were the guests of Taylor Bros. (Sandiacre) Ltd., permanent way specialists, at the works at Sandiacre, on Saturday, September 18. The party assembled at the London Midland Region station in Nottingham, and was conveyed to Sandiacre by special train. No set programme was arranged, and the visitors were given the opportunity of concentrating on any of the firm's activities in which they were particularly interested. The assemblies of point and crossing work in the yard attracted considerable attention. These included leads and diamond crossings, in 113-lb. flat-bottom track, for the London Midland Region main line, at Lichfield; a turnout, in 110-lb. flat-bottom track for Holbeck, near Leeds; and a complicated layout, in standard bull-head track, on interlaced and scarfed longitudinal timbers, for sharp diamond crossings at Retford, on the Eastern Region.

* * * *

Reduction in United Kingdom Air Fares

Reduced fares on some British European Airways United Kingdom services will come into operation from October 3 inclusive. As an example of how the new fares will compare with railway charges, the British European Airways Corporation points out that its new monthly return fare from London to Glasgow will be £11, against a total for a first class monthly return railway journey with sleeping berth of £11 8s. 8d. (the fare in question is £8 3s. 6d., and the sleeper supplement is 32s. 7d. each way). The air rate of £11 includes transport to and from the airports and central points in the cities concerned. The flying time on the London to Glasgow journey is about 2 hours, and the total journey time, 3½ hours, each way. Other examples of air reductions are:—monthly return fares: London-Edinburgh, £11 (reduced from £14 15s.); London-Inverness, £15 18s. (£20); London-Orkney, £21 2s. (£24); London-Stornoway, £19 (£22 11s.); Manchester-Belfast, £5 10s. (£7 16s.); London-Belfast, £11 (£14 4s.). Passengers who have already paid at the existing rates for journeys to be undertaken on or after October 3 will have the differences refunded.

* * * *

Mr. Bulleid on Modern Locomotive Trends

On Friday, September 10, at the morning session of Section G (Engineering) of the British Association's meeting in Brighton, Mr. O. V. Bulleid (a Vice-President of this Section) gave an important summing-up of present-day developments and trends in railway locomotives. Beginning at the turn of the century, he traced the chief landmarks and characteristics in the designs of H. A. Ivatt, Churchward, and Gresley, and referred to the latest Pacific put into service in the closing days of the L.M.S.R. In addition, he showed how his 4-6-2 "West Country" design incorporated improvements over, say, the "King Arthur" class 4-6-0s, so that a better power/weight ratio was obtained. In this case, weight was saved, for instance, by using steel instead of copper fireboxes, and power was increased by raising mechanical efficiency through better lubrication and a totally enclosed valve gear; also, larger piston valves had enabled better steam distribution to be effected. Mr. Bulleid described new developments in water treatment for locomotives in France and England, and stated that with the T.I.A. system it was now possible to raise the interval between boiler washings from 7 days to 2 months. The most interesting part of his discourse, however, was the description of the "Leader" class locomotives now in an advanced stage of construction. Certainly no such revolutionary steam locomotive has been built since the "Paget" engine of the Midland Railway, some 40 years ago. The two designs have certain features in common and make an interesting comparison.

* One of these engines, a 4-4-0, is illustrated on p. 354

The User of Locomotives for Revenue Earning*

FEW, if any, aspects of railway work are more scantily covered in printed publications than locomotive operation. There are very few books on the subject, and the seeker after information may well find that his only course is to search the past Journals of the Institution of Locomotive Engineers where, fortunately, many excellent papers on running shed practice are to be found. Nevertheless, many of these papers deal only with certain specialised aspects, instead of giving a general treatment; and a broad survey is therefore comparatively rare.

Congratulations are certainly due, then, to Lt.-Colonel H. Rudgard, O.B.E., on his Presidential Address to the Institution of Locomotive Engineers in London on September 15, for the breadth of vision which he displayed in a review of locomotive operating characteristics in Great Britain today. Under the title "The User of Locomotives for Revenue Earning" he gave, first, a short history of locomotive design features, referring both to the chief new designs and details introduced from early days down to the present time, and to the principal contributions of private manufacturers of locomotives. Having shown the bearing of design on operation, he devoted the remainder of his address to the organisation of motive power, a subject in which he has made a considerable reputation for himself. The printed version of this address will be eagerly awaited, for much of the most important material in it was, from its very nature, most effectively presented in tabular form, and even if the slides containing the data could have been more easily seen, the mind could hardly have taken in the wealth of information contained in them. These statistical summaries were, in fact, the very core of the address, and will be of great value for future reference. The large attendance at the meeting was a measure of the great interest in the subject as well as a tribute to the President's standing among locomotive men.

The President is the first Chief Officer for Motive Power to be appointed on the nationalised railways of this country. He states that, on careful reflection, he does not consider that nationalisation will affect the work of the Institution of Locomotive Engineers, either in the number and excellence of the papers, or in any decrease in membership, unless it be that with the departure, no doubt, in time, of the Chief Mechanical Engineers, and concentration of design, workshop activities, and motive power into one executive, the individual practices and experience will be lost.

A handsome tribute to locomotive engineers of the past was made by Colonel Rudgard in the presentation of a long list of their principal achievements, whether in the introduction of new types or in smaller innovations such as the extended smokebox. In his own words: "The upward curve of development has contained many local valleys and peaks in periods where collaboration in the interests of motive power has ebbed and flowed. Reversion to simplicity is also acclaimed as a "development." The motive power man, like other locomotive engineers, will naturally recognise the genius of a Churchward or an Ivatt; but he will also pay tribute to such men as George Whale, "who returned to simplicity after the riot of Webb's superabundant genius." The work of McIntosh, who broke free from the cult of the small boiler, and of Urie, who substituted robustness and simplicity for the complex and inaccessible designs of Drummond, is similarly welcomed.

On the former Midland Railway, collaboration between Sir Henry Fowler and Cecil Paget, with their understanding of the running shed viewpoint, helped to produce pre-eminently satisfactory machines—both in reliability and in low repair costs—which became the models for the L.M.S.R. after the formation of that company in 1923.

The importance of the work done by private locomotive manufacturers is not always as fully realised as it should be; and Colonel Rudgard's address does much towards righting this defect. He referred to the early work of Robert Stephenson and of Hawthorn, and mentioned that the Vulcan Foundry originated from the difficulties experienced in transporting locomotives overland from the Newcastle area to the Liverpool and Manchester Railway. In more modern times, the good work of the Beyer-Garrett locomotives on the Kenya & Uganda Railway and the Rhodesian Railways receives due recognition, where an availability approaching 90 per cent. has been achieved.

British-built locomotives embrace designs adapted to every gauge of railway, every axle-load, grade, curvature, and condition of traffic, and all extremes of climate encountered in railway operation. It is natural that, since Great Britain was the birthplace of railways, and since the quality of the work turned out by British locomotive manufacturers has been so high, we should find British-built locomotives at work all over the world at the present time. Again, the economic advantages accruing to Great Britain through the export policy of the British locomotive industry should not be lost sight of. Much of our essential raw materials and foodstuffs come to us as a result of these exports, and, indeed, it has been suggested abroad that unless adequate motive power is received from this country, maximum reciprocal aid cannot be expected. Finally, the locomotive building industry has gathered further prestige to itself through the contracts received by its various member firms for building important types of locomotives for the British Railways.

What are the five most desirable qualities in a steam locomotive? Colonel Rudgard lists these as: free steaming; reserve of power; accessibility; ease of repair; and freedom from failure. The availability of the modern locomotive is also a matter of the highest importance; it should not be less than 85 per cent., and the future target should be 90 per cent.

Those who have followed the stimulating correspondence in recent issues of our contemporary *The Engineer* will be interested to learn that, in Colonel Rudgard's view, "there is only a limited demand for large locomotives (passenger or freight)." So vast a quantity of traffic originates in small quantities in various areas that the collection of it requires only small units. Light branch-line or cross-country trains or short runs in the vicinity of large stations, and many trains between large towns call for small or medium-sized locomotives.

A "purge" of existing locomotive stock is recommended, those of poor design being "liquidated" first, whilst at a later stage superannuated machines should be considered for scrapping. Present-day design should develop in the direction of simplicity, to give maximum availability. Any fittings which will help towards reaching the goal of "No preparation by Driver or Fireman" are worth cultivating, so that those highly paid specialists can be used to earn revenue for the greatest possible amount of the time they are on duty. Goods and shunting locomotives should be made available for traffic for practically 24 hours a day (one preparation)—144 hours per six days. Passenger and express goods engines should do 16 hours per day (one preparation), *i.e.*, 96 hours in six days.

The design features which affect availability and hence revenue-earning capacity include:—

(1) Boilers. Pitting of plates, wasting of rivets in flanges, and wasting of roof stays, and formation of scale, all may suggest that we may have been content too long with the present type of locomotive boiler.

(2) Accessories. Self-cleaning smokeboxes, rocking grates, and hopper ashpans improve the availability; likewise mechanical lubrication and (where possible) grease lubrication.

(3) Steam parts. Valves, pistons, and rings and their efficient lubrication need to be well maintained, otherwise the coal bill may be seriously affected.

Coal consumption, which can be checked to within 10 lb. by means of a coal-weighing tender, so that, if excessive, its causes can be ascertained, is of paramount importance. The yearly coal bill of British Railways is at present about £36,000,000. The number of pounds of coal burned per engine mile is a most important factor, and the average figure is adversely affected when large locomotives are regularly used on light trains. This is not to say, however, that it is not always desirable for a locomotive to have a reserve of power when working trains.

Streamlining, once a feature of many of the largest express locomotives on the former L.M.S.R., is now regarded as a nuisance. It may have had some publicity value, but its adoption makes it difficult to carry out maintenance work, and there is considerably more wear on motion pins, etc., apart from detracting from the appearance of a locomotive.

The efficiency of locomotive maintenance can only be guaran-

* "The User of Locomotives for Revenue Earning." Presidential Address of Lt.-Colonel H. Rudgard, O.B.E., Chief Officer, Motive Power, Railway Executive, to the Institution of Locomotive Engineers on September 15, 1948

teed by efficiency in the training of the artisan staff in running sheds, in Colonel Rudgard's opinion. Fitters and boilersmiths in the Motive Power Department receive basically the same training as in the workshops, but their workmanship is subjected to a much more searching test, because any locomotive parts which they have repaired are immediately afterwards subjected to traffic working conditions, whilst engines repaired by workshops staff undergo trial trips. "Schools on Wheels" and mutual improvement classes provide instruction for cleaners and young firemen; and an Apprentice Training Scheme is in being for future fitters, boilersmiths, and coppersmiths. For Graduate Members of the Institution, too, Colonel Rudgard has advice in the form of St. Paul's famous exhortation: "They that run in a race run all, but one receiveth the prize. So run that ye may obtain."

It is now so long a time (36 years) since the famous L.N.W.R. 2-4-0 locomotive No. 955 *Charles Dickens* was scrapped, that its astonishing performances are apt to be forgotten. It ran 1,000,000 miles in 10 years, doing a daily mileage of 374 between Euston and Manchester. At 6 days a week, this equals 2,244 miles; and at this rate the yearly average of 100,000 miles would be achieved in 45 weeks, leaving 7 weeks or 42 working days in each year for effecting examination and repairs. Colonel Rudgard admitted that he had tried to get an equal annual mileage out of L.M.S.R. "Pacifics," but could not achieve an average—with 45 locomotives—of more than 67,000 miles (one case of 93,250 miles and four cases of 85,000 miles being included).

That a higher figure is not being obtained by these "Pacifics" is somewhat surprising, but the probability is that there are comparatively few rosters on which they can make really spectacular showing. Before the 1939-45 war L.M.S.R. "Pacifics" were rostered (as reported by Sir William Stanier in his Presidential Address to the Institution of Mechanical Engineers*) to take the 10 a.m. from Euston to Glasgow, arriving at 5.40 p.m., and then to return with the 10.45 p.m. to Euston, continuous runs of 7¾ and 8½ hours respectively, with an interval of 5 hours for train disposal, running to shed for coaling, and ash disposal. The mileage of the round trip was 804; and this working, at any rate, appeared to offer opportunities for a much higher annual mileage than was achieved by *Charles Dickens*.

Colonel Rudgard saved the most important part of his address until the end. This consisted of an examination of the present methods of getting the most use out of locomotives, with some very valuable suggestions for improvements. His ideas go right to the fundamentals of railway operation and involve (to use his phrase) "rescheduling the schedule" so that trains are put to locomotives and men, not locomotives and men to trains. The intensive use of locomotives, he said, should be determined in the diagrams. Drivers', firemen's, and cleaners' wages now cost the British Railways about £830,000 a week, and coal costs a further £695,000 weekly, so that it is a matter of urgent economic necessity to "reschedule the schedule." Diagrams should be prepared with scientific accuracy; the marshalling and loading of passenger trains, the loading of goods trains, and any other distinctive features must be allowed for. Finally, the diagram should contain an indication of the most suitable class of engine for each job. The classification of locomotives into "power classes" is essential in any such scheme.

Anticipating that his "rescheduling the schedule" proposals would draw forth the time-worn criticism that the trains must be run for the convenience of the public, Colonel Rudgard pointed out that, given punctuality, civility, and cleanliness, the public would use the trains offered—hence his argument for putting trains to locomotives and men, instead of locomotives and men to trains. This is directly in line with the arguments for shorter trains and more of them, which was the subject of several editorial articles in recent issues of *The Railway Gazette*, in particular those of July 16 and August 27. We cannot but feel that Colonel Rudgard, in his official position as Chief of Motive Power, would heartily approve the provision of more frequent, and lighter, trains since it is so much easier to find the locomotives to haul them and to get the maximum use of engine crews' time. The superlatively large and powerful locomotive has only a comparatively small range of duties for which it is really fitted and Colonel Rudgard rightly deplores their regular use on light trains—a matter which has often drawn derisive comment from laymen unfamiliar with diagramming difficulties.

How is the Motive Power Department concerned in enabling the best use of locomotives to be made as revenue earners? They can urge the designers to ensure free steaming, a good reserve of power, accessibility, ease of repair, and freedom from failure. They can campaign for carefully designed motive power depots with good facilities for dealing with ashes, etc., adequate boiler-washing plant, steam lines for "pre-steaming" (the American "direct steaming"), good lighting, and protection of staff from the elements in bad weather. The optimum layout, above all, calls for careful and detailed analysis of engine movements. It is a sad reflection that the locomotive, as a prime mover, has developed so much faster than the housing provided for it.

A brief look to the future concluded this notable address. Colonel Rudgard holds the opinion that diesel-electric locomotives of 350-400 h.p. will continue to be used for shunting; no satisfactory diesel-mechanical locomotive of this power had yet been designed. For main-line passenger work in this country, the field for diesel-electric locomotives was extremely limited owing to the high initial cost and the type of fuel used. There were possibilities for a medium-powered unit on certain cross-country routes.

He thought that if the steam locomotive ever were displaced, it would be by electrification, and ended with a quotation from a predecessor in office, Mr. W. S. Graff-Baker: "The fact remains that the steam locomotive is a magnificent machine, and has done more for the cause of civilisation than any other effort of the mechanical engineer—far more than the internal combustion engine, which now seems to have a heavy debt as well as a credit in its balance sheet." With this thought in mind, concluded Colonel Rudgard, and by concentrating on the intensive user (which can be developed to a high standard) the steam locomotive will remain in the forefront for many years.

* Proc. I.Mech.E., 1941, Vol. 146, p. 57

* * * *

Need for Continuity in Transport Statistics

AN editorial in our September 10 issue explained that the British Transport Commission had recast and amplified the tables appearing in the June number of *Transport Statistics*. Changes have been made on such an extensive scale that the booklet runs to 67 pages and contains 43 tables. On the whole, the alterations and additions are decided improvements, though one change in the London Transport staff table throws it out of line with the corresponding table for British Railways, besides vitiating the summary of the Commission's total staff.

The May bulletin showed London Transport as employing 10,739 salaried staff. In June a new heading "administrative staff" is introduced, covering 4,782 people only, while separate figures, totalling 5,703, are given for supervisory staff and clerks attached to various departments. The summary of the Commission's staff shows only the 4,782 administrative staff of London Transport under the heading "Salaried Staff (Administrative, Technical and Clerical)." The result is that the total salaried staff employed by the Commission in June appears as 116,627, or 5,721 less than the number employed in May. We hope that correct figures for this category of staff will be published in the July bulletin.

Another question of fundamental importance arises on the freight traffic statistics. The table of "loaded wagons forwarded" purports to show the number of wagons containing both revenue earning and free hauled traffic. The June figure is given as 2,684,000, about 3,000 below 1947. Obviously, these figures are calculated on a different basis from the returns for the years 1943 to 1946 prepared by the Freight Rolling Stock Control Committee and published in the Ministry of Transport's *Summary Table of Statistical Returns*. The Ministry's figures are repeated, in the form of weekly averages, on page 106 of the *Monthly Digest of Statistics* for August, together with comparable figures for 1947. For the present year the *Digest* repeats the Commission's numbers for the first five periods to May 16, but for the June period gives the number as 2,888,000—or 7 per cent. greater than the number stated in

Transport Statistics. For June, 1947, there is a wider discrepancy of 9 per cent. between the two sets of numbers.

The source of the *Digest's* figures is the Ministry of Transport, and we hope the reversion to the old basis for June means that the continuity of our railway statistics will be preserved. It would be regrettable if that continuity were broken at a time when valid comparisons will be wanted between results before and after nationalisation. For many statistics are based on the number of loaded wagons forwarded. It is used to calculate the average wagon load at starting point, which in turn is multiplied by loaded wagon miles to form an estimate of net ton-miles. The new method of computing loaded wagons brings the wagon load at starting point up to 8·06 tons for the June period, as compared with 7·82 tons in 1947. Both figures are in excess of the loads recorded for the busy years 1943 to 1946. The peak load was 7·54 tons in 1946, when the total tonnage was well above the 1947 level. It seems unlikely that the average wagon is now starting off with half a ton more than it did two years ago. If the bigger load merely exists on paper, the estimate of net ton-miles may be inflated and statistics derived from that estimate, such as train load and length of haul, may be far out also.

The general understanding was that the figures prepared by the Freight Rolling Stock Control Committee were used in the actual work of distributing wagons. Service wagons and non-requisitioned private owners' wagons were ignored, as the Committee does not look after them, but the figures showed the full extent of the burden falling upon the stock of railway traffic wagons. That cannot be said of the new set of figures which the Commission adopted in April, without explaining the scope of the new table. We venture to suggest that the whole question should be reviewed by the officers concerned at the Ministry of Transport, the Commission, and the Railway Executive.

* * * *

The 25-Mile Radius

PERHAPS the most important feature of the Transport Act, 1947, from the viewpoint of the individual haulier, is the fact that the Act proposes to nationalise long-distance goods transport, but to leave local transport within the permissible activities of private enterprise, although subject to competition from the British Transport Commission and its agents. In this respect, the salient features of the Act are that, on and after the appointed day, it shall be a condition of every A and B licence that goods shall not be carried for hire or reward in any authorised vehicle, if the vehicle, at any time while the goods are being so carried, is more than 25 miles from its operating centre. The extent to which private enterprise will be permitted to carry goods for hire or reward, is therefore governed by the definition of the expression "operating centre," and it may be that this will prove one of the principal bones of contention in the interpretation of the Act.

Section 58 (1) defines the operating centre as "the premises specified in the application for the licence as the permanent base or centre from which it is intended that the vehicle will normally be used for the purpose of carrying goods for hire or reward." However, Sub-section (3) of the same Section permits the applicant to request the licensing authority to specify a point to be treated as the operating centre for all or any of the authorised vehicles of the operator, and empowers the licensing authority if he thinks fit to specify any such point in his area as the operating centre.

Even with a localised collection and delivery business, and transport undertaking, in a large industrial area, it may be that the actual headquarters is near the circumference of the area of operations, and the fixing of this point as the operating centre would give the haulier only half the effective area envisaged by the Act, the other half being outlying parts providing little or no traffic. Again, some local haulage businesses tend to serve a short trunk route, with the haulier's headquarters at one end and an agency at the other. Examples which come readily to mind are routes between the Lancashire and Yorkshire industrial areas, or between such places as Croydon and the South Coast. The needs of such businesses would be met by the fixing of an operating centre at a mid-way point, but this point clearly would often not be the permanent base or centre from which the vehicle was used normally. In fact, with a Lancashire or Yorkshire haulier, the mid-way point might easily be a small village on the moors, and, with the Croydon to the South Coast example, it would possibly fall about Crawley.

Section 58 (3) of the Act clearly allows the licensing authority to specify such a point, but leaves the decision entirely to his discretion, and no specific provision is made for appeal against his decision. The Minister of Transport also has wide powers under Sub-section (6) of making provision for changing the operating centre on the application of the licensed holder, either temporarily or permanently, but here also the powers are entirely discretionary.

The crux of the matter would seem to be whether the Minister and the licensing authorities regard applications of the kind we have mentioned as efforts to defeat the object of the Act, and reject them accordingly, or whether they regard the various possibilities afforded by Section 58 as the provision by Parliament of the means to satisfy the requirements of particular types of haulage business that are not in their nature radial from the headquarters.

* * * *

British Transport Commission Statistics

TRAFFIC returns of the British Transport Commission for the four weeks to September 5, which show an increase of £2,434,000 on the corresponding period of last year, were less by £972,000 than the previous four-week period, which included the bank holiday week. Receipts of British Railways at £27,282,000 were only £2,068,000 more than a year ago and show a decrease of £994,000 on the previous month. The passenger revenue at £11,748,000 increased by £288,000 and compares with an increase of £1,154,000 for the four weeks ended August 8.

London Transport revenues made a somewhat better showing, for receipts at £4,558,000 were £352,000 more than last year, whereas last month the corresponding increase was only £241,000 over 1947. In the Table given below, the divisions of traffics are given for the four weeks to September 5, and also the figures for the year to that date, as compared with the similar period last year.

—	Four weeks to September 5		Incr. or decr.	Aggregate to September 5		Incr. or decr.
	1948	1947*		1948	1947*	
	£000	£000	£000	£000	£000	£000
British Railways (receipts from railway working)						
Passengers	11,748	11,460	+ 288	89,136	82,404	+ 6,732
Parcels, etc., by passenger train	2,309	2,065	+ 244	20,158	17,680	+ 2,478
Merchandise (other than Classes 1-6) and livestock	6,126	5,803	+ 323	58,021	48,847	+ 9,174
Minerals and merchandise (Classes 1-6) ...	2,150	1,719	+ 431	19,559	13,920	+ 5,639
Coal and coke	4,949	4,167	+ 782	45,179	36,535	+ 8,644
	27,282	25,214	+ 2,068	232,053	199,386	+ 32,667
London Transport—						
Railways	1,098	996	+ 102	10,060	9,068	+ 992
Buses and coaches ...	2,566	2,369	+ 197	21,893	19,663	+ 2,230
Trolleybuses and trams...	894	841	+ 53	7,775	7,138	+ 637
	4,558	4,206	+ 352	39,728	35,869	+ 3,859
Inland Waterways—						
Tolls	61	51	+ 10	517	419	+ 98
Freight charges, etc. ...	79	75	+ 4	628	590	+ 38
	140	126	+ 14	1,145	1,009	+ 136
Total	31,980	29,546	+ 2,434	272,926	236,264	+ 36,662

* The comparison of 1948 with 1947 is affected by increases in fares, rates, and charges, which were introduced at different dates during the year 1947 to meet increases in operating costs

For the 36 weeks of the current year the total receipts of British Railways at £232,053,000 are £32,667,000 up on the same period of 1947. Merchandise and livestock receipts at £58,021,000 represent the greatest divisional increase. Total traffic receipts of the British Transport Commission for the year to date are £272,926,000 and stand £36,662,000 higher than last year.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Continuous Brakes on Freight Trains

29, Manor Road, Crosby,
Liverpool, 23. September 12

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have been interested in the correspondence on the above subject, and suggest that the above brake could be fitted to all wagons without going to the expense of utilising screw or automatic couplings. Wagons could be fitted with the "Instanter" type of shackle as used by the former G.W.R. for the majority of its vacuum fitted wagons.

The "Instanter" coupling can be shortened for use on fitted trains and lengthened for shunting, by the ordinary shunting pole, so wagons thus fitted can be dealt with by an experienced shunter standing in the "6-foot," almost as quickly as loose coupled wagons.

Yours faithfully,
W. H. STANIER

2, Old Park Ridings,
London, N.21. August 26

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your correspondent, Mr. Parker, in the August 20 issue, must be a little unobservant if he has not noticed that the great majority of fitted wagons in this country are also provided with side handbrakes, so that his complaint about lack of control in shunting will not hold water so far as this country is concerned, and in France the same applies.

In the case of Germany and Switzerland, where side brakes are not provided, the practice is normally either to provide retarders, which do in fact retard, or else in smaller yards to use the guards' platforms or boxes, which are provided on every Swiss wagon and on about 60 per cent. of German wagons, for the shunter to ride in and work the screw hand brake as required.

In addition, in Switzerland, most shunting is done with the Westinghouse reservoir fully charged on each wagon, and the shunter then also has an immediately available and powerful air brake available for emergencies, by opening the guard's cock or kicking open the angle cock at the end of the vehicle.

As for your correspondent Mr. Barry's complaints in the same issue about the time taken to create a vacuum in trains on to which vehicles are being attached, the provision of angle cocks would avoid the necessity for complete discharge of the main portion of the train when adding vehicles, or, if like the rest of Europe, and North America, we had used Westinghouse brakes, the enormous time lag in exhausting a 50-wagon goods (or for that matter a 16-coach passenger) train would not occur. This is not to mention "Empty-Load" and "Plain-Mountain," and other refinements now being fitted in Europe.

In conclusion, one can only say that foreign railwaymen view our freight wagons with amusement, and more often concealed contempt.

Yours faithfully,
G. H. HAFTER

Italian Railway Reconstruction Progress

Società Italiana Ernesto Breda,
Milan. July 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—From the article "Italian Railway Reconstruction Progress," published on page 737 of your issue of June 25, we gathered that some information involving our activity is mistaken and, considering it as a duty to give it prominence, we beg to call your kind attention to our following statement:

No order has been placed with us for the supply of 150 diesel railcars with Wilson change-speed, but only the execution of repairs of a like number of war-damaged diesel railcars to be fitted, each, with two new Breda 170-h.p. D-17 engines with Wilson-Breda change-speed.

The length of the aforesaid diesel railcars is not 295 ft. 3 in., but of 22·74 metres considering the dimension from the outside of the buffers, say, just a little more than 74 ft.

We notice, incidentally, that the railway express service on the Milan-Mantova line is presently being carried out, with railcar, in 2 hr. 20 min. and not in 3½ hr.

The new railcars with the traction machinery placed beneath the floor, in course of construction, are fitted with a single 350-450-h.p. engine and not with two 600-h.p. horizontal engines.

Finally, we would observe that, as far as the exactness of our information is concerned, the Fiat streamline train was not exhibited at the New York World's Fair where, on the contrary, was exhibited our three-unit electric train.

We think we are doing right in making you advised of such oversights, and should you deem it advisable to amend them for your next edition, we shall appreciate your information thereof.

Your very truly,
ING. BERTOLINI,
General Secretary

Flashing Light Signals

149, New Bond Street,
London, W.1. September 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Sorry; a slip of the pen, the frequency of the flash is 55 times per minute, of course.

Yours faithfully,
W. H. R. GODWIN

Lickey Junction *v.* Dainton Bank

Field Road,
Reading. September 5

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—For years the terrors of the Lickey incline, which ascends for a distance of 2¼ miles in a straight line at a gradient of 1 in 37¼ between Bromsgrove and Blackwell on the Bristol-Derby main line of the L.M.R., have been driven home with Goebbels-like persistence until most of us believe them.

After inquiry, however, one wonders whether it was a question of the incline being so severe or the engines being so feeble in the days before Sir William Stanier left Swindon to transform the L.M.S.R., and when I write of engines in the plural I do so with reason, for who has not seen photographs of trains being assisted up the Lickey with two in front and two or even three in the rear?

Imagine this on the Western Region! Yet, just west of Newton Abbot begins the less-boosted Dainton bank, not quite so long perhaps, but not so straight, and with a ruling gradient of 1 in 36, up which "Castle" class engines are scheduled to haul 315 tons without a banker, and the "Kings" 360 tons.

Farther west, for through expresses to Newquay, an even greater test exists. Shortly after leaving Par, on the single line from St. Blazey, commences Luxulyan bank, just over three miles long and curving through a dense wood, with resulting greasy rails in wet weather. The ruling gradient here is 1 in 35.

Locomotive tests are all the rage at present. What could be more interesting than a "Castle" with a test load up the Lickey and a Deeley Compound up Dainton.

I have an idea the Bromsgrove bankers could have the day off.

Yours faithfully,
L. R. WILLIAMS

[The ruling gradient of Dainton incline (1 in 36) occurs only for about 10 ch., and the remainder of the bank is decidedly easier, although far from straight. Lickey incline has a gradient of 1 in 37¼ throughout. Comparisons of gradients based on pure figures are apt to be misleading, as so much depends on varying conditions, such as loads and maximum permitted axle weights. The goods traffic on the Lickey incline is far heavier than that on the main line to Plymouth—ED., *R.G.*]

South African Railways Staff College

Dairy House, Charles Street,
Griffithstown, Pontypool.
Mon. September 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Again as a practical man I feel prompted to pass a few comments on an article published in *The Railway Gazette* dated September 10 under the heading "South African Railways Staff College." I think the project as a whole is entirely original in its outlook and will do much to bring about the desired effect generally, but as a footplate man I was keenly interested in the portion relating to the method adopted for the training of such staff, and it is to that portion that I should like to confine my remarks.

Firstly, the idea and method adopted to give these potential engine men the enthusiasm and interest in the job is first class and I think if such methods were applied more widely in this country it would be of great value in holding these youngsters in this day and age when a large majority of workers seem to look for the week-end leisure which other industries are doing so much to bring about.

Secondly, I feel also that a much greater interest and pride would be taken in the craft if such facilities were afforded to

the prospective driver. I am aware that some steps have been taken in this direction by the former L.M.S.R.

I think, too, that the Railway Executive and the Minister of Transport should do more in this direction in order to bring about a greater understanding and feeling of responsibility, if the railways are going to play their proposed part in a nationalised transport system.

Yours truly,
KENNETH C. SMITH

The Distant Signal

Chinthays,
Lymington, Hants. August 23

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I read with interest the letter on this subject from Mr. E. R. B. Roberts in your issue of August 20, as he appears to be an advocate of the Indian "outer," and I have had many years' experience of that type of signalling. I have always considered it most unfair to drivers, who have no warning, that the first signal they are approaching may require them to stop at it. It has also been in my experience the source of considerable loss of time, particularly by unbraked goods trains. Before the war, on the Burma Railways, main-line goods trains used to load up to 1,100 tons (75 wagons) behind the tender, and, except for the daily Rangoon-Mandalay fast goods, were not vacuum-braked. Such unbraked goods trains required nearly a mile in which to pull up from 30 m.p.h. There were many outer signals, which, by reason of bad background or curvature, could not be picked up with certainty at much more than half that distance. This meant that every goods train, even though signals were off for a run-through, had to reduce speed until the driver could pick up the outer signal.

I have for many years waged a campaign against a stop signal being the outermost signal of a station. Fortunately, a sympathetic chief engineer and signal deputy during reconstruction planning in India in the war enabled a multi-aspect signalling system to be worked out, which, we considered, gave every information to the driver to enable him to control his train, with very adequate warning before he met a dead stop signal. A typical installation for a wayside station on the single line is shown in Fig. 1. The distant has three aspects (at night, yellow, double yellow, and green) and can only go to 90 deg. (green) if the outer is also at the 90 deg. (green) position. On the bracketed routing outer, only the arm for the straight (through) road can go to the 90 deg. position, that for the loop being arranged to go to 45 deg. (yellow) only. No home signals are provided at the points, but a time release is fitted in the stationmaster's slide control frame to prevent movement of the facing points until the train has had time to come on to the facing point lock-bar. No starters are provided on the single line, the handing over of the token to the driver being considered sufficient, but on the double line starters are to be installed.

For branch lines, where all trains stop at every station, the system has been simplified to a "fixed distant, working outer" scheme, but the braking distances, overlaps, and so on, are the same as for the more complicated multi-aspect scheme for the main line.

Had such a system as that described in my second paragraph been in use at Goswick, the unfortunate accident there would probably not have occurred, as, even if the driver had missed the distant, the 45 deg. position of the next two signals would have told him at once that his speed was to be restricted. A diagram of this system of signalling as it might be installed at Goswick, with the aspects it would have shown towards the ill-fated train, is given in Fig. 2.

I do not think Mr. Roberts can be correct in saying that at "the vast majority of stations, both at home and abroad, there are only two signals, the distant and home." I should have thought that such stations, where, as he puts it, the home serves as starter as well, were quite in the minority.

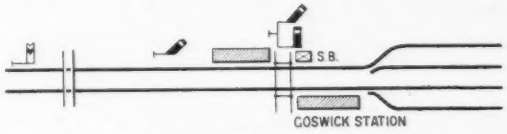


Fig. 2—Suggested Goswick installation

He suggests that the Goswick home signal, No. 22 (see diagram in your July 16 issue) is unnecessary. This would mean that the "adequate distance" beyond a stop signal, which a train would have to clear before line clear could be given for a following train, would have to be as far beyond the starters as it is today beyond the home signal.

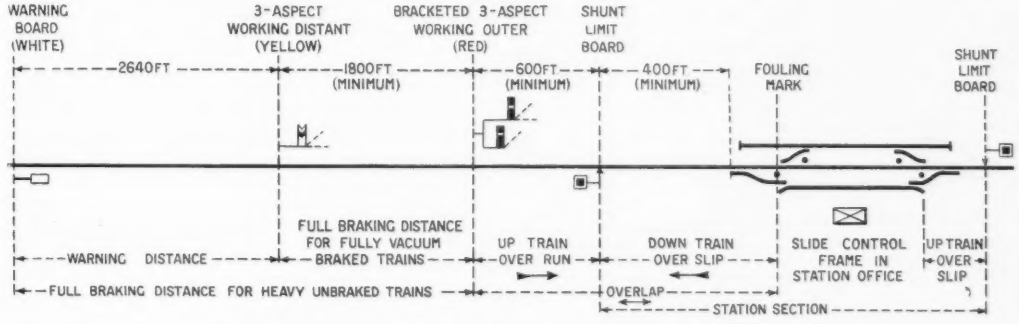


Fig. 1—Typical installation for a wayside station

I am also unable to agree with his statement in his penultimate paragraph that "although in other countries the distant is a 'stop' signal the average speed of trains—passenger and goods—is twice (!) as fast as British trains." With your editorial comment on Mr. Roberts's letter, I quite agree.

Yours faithfully,
E. V. M. POWELL,
Chief Operating Superintendent,
Burma Railways

Accommodation on the West Highland Line

Eastern & North Eastern Regions,
11, Blandford Square,
London, N.W.1. September 16

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Answering Mr. C. McK. Cray, whose letter under the above heading was published in your issue of September 3, during this summer the traffic for the West Highland line has presented us with certain difficulties on Friday nights, when the normal formation of the Fort William portion attached to the 7.0 p.m. train consists of six first class berths and 12 seats, and 24 third class berths and the same number of seats, giving a total accommodation for 18 first and 48 third class passengers.

As from August 13, an additional third class coach with seating accommodation for 56 passengers has been included in the Fort William portion, and since then no difficulties have arisen.

Needless to say, the whole of this working will be reviewed afresh in connection with the summer train services of 1949, and everything possible will be done to ensure that the traffic then offering is adequately catered for.

Yours faithfully,
GEORGE DOW
Press Relations Officer

TRANSANDINE RAILWAY REOPENED.—The Transandine Railway, temporarily closed after having been damaged by snowstorms, as reported in the August 27 issue, was reopened to service on September 3, after repairs to the track and installations had been effected. For the moment, it is necessary to tranship from the Argentine to the Chilean train at kil. 176.

The Scrap Heap

Rearguard

Holidaymakers in the 6.22 p.m. train from Charing Cross to Hastings cheered as their guard finished a 12-minute sprint along the track to catch them up. He had been left behind at Hildenborough, near Tonbridge, Kent.—*From "The Daily Mail."*

* * *

"Vacuum Heating"?

Preparing for this move an extra labour force was employed by the British Railways throughout the summer months to reinstall and clean the vacuum pipe heating system of Britain's 40,000 railway coaches.

Heating on ordinary night trains will start on October 1.—*From the "Manchester Evening News."*

* * *

Conductor Kisses Passengers

As a No. 23 bus was on its way to Becontree at midday last Tuesday, the conductor stopped it at the corner of New Road and Commercial Road, Stepney, and started kissing passengers as they got off. Some of the women passengers struggled with the conductor. Others called the police.

Two policemen boarded the bus and restrained the conductor, who kicked out two of the bus windows. After a struggle lasting several minutes, during which some of the women passengers became hysterical, the conductor was carried off and taken to hospital in an ambulance. A London Transport official said later: "The conductor was apparently taken ill. The bus was taken out of service."—*From the "Evening Standard."*

* * *

"Trespass"

A garage proprietor of Kentish Town was at Clerkenwell fined £1 with 15 guineas costs for trespassing on railway premises at Kings Cross Station and refusing to leave when told to do so.

The magistrate said: "I am satisfied that you were a trespasser in the ordinary sense. The proposition that the railways are now nationalised and that any member of the public is entitled to go on their property and cannot be requested to leave is one that cannot be accepted."

Defendant, as was reported in *The Scrap Heap* page of August 27, had submitted that the railway system, lines, and facilities should be freely available for the legitimate purposes of the public, in the same way as were the parks, commons, roads, and by-ways.

* * *

Travelling Bookstalls

Even by providing bookstalls on certain Pullman trains, British Railways have not quite caught up with the amenities offered by an earlier transport service.

When George Shillibeer put his first buses on the roads in London in 1829 he sought to popularise them by providing each vehicle with daily papers, periodicals, and even a selection of the newest books, for the free use of passengers during their journey.

Even with a minimum fare of a shilling, this must have been a big consideration in days when most papers cost sixpence or more, and not a few people, it was said, took a daily ride merely to avail themselves of the free literature. Unfortunately, some made too free with the travelling libraries, and so many books and periodicals were stolen that Shillibeer had to withdraw the privilege.—*From "The Scotsman."*

* * *

100 YEARS AGO

From The Railway Times, *Sept.* 23, 1848

London and North-Western Railway.

It will be recollected that during the dispute between the authorities of the above Company and the old engine-drivers and firemen, the guards and breaksmen readily undertook, at the request of the Board, to ride on the foot plate of the engines in order to acquaint the new drivers with the character of the road, and to point out to them the signals at the various stations. We learn that the manager of the line brought, a few days since, their good conduct before the attention of the Directors, who passed the following resolutions:—

"That this Board has much pleasure in recording its sense of the excellent conduct of the guards and breaksmen during the period of the line being worked by the new drivers.

"That the ready and cheerful manner in which the whole of them undertook the duty suddenly imposed upon them, merits the approbation of this Board.

"That the freedom from accident, in the conduct of the service during the period alluded to, is in no slight degree to be attributed to the active assistance of this class of their servants; and that their attention to orders, under very peculiar circumstances, deserves this testimony from the Board in corroboration of that general good conduct which has so long characterised them as a body."

It was likewise resolved—

"That a gratuity be given to each man employed in this extra duty. That the minute be printed, and that a copy of it be given to the guards and breaksmen, with the name of the party to whom it specially applies."

It is stated that nearly 200*l.* have been thus distributed among the guards and breaksmen.

Chin Strap Hanging

At the Vienna Autumn Fair was exhibited a portable "sleeper" consisting of a small pillow and collapsible arm rests designed to overcome the shortage of sleeper accommodation on night trains

* * *

Footplate Trespass

Because he had "long wished to ride on the footplate of an engine," an ex-major in the Royal Armoured Corps walked along the footboard of a London-to-Tonbridge train and made his way to the engine. The train was travelling at more than 40 m.p.h. at the time, and driver and fireman were alarmed to see someone arrive in their engine.

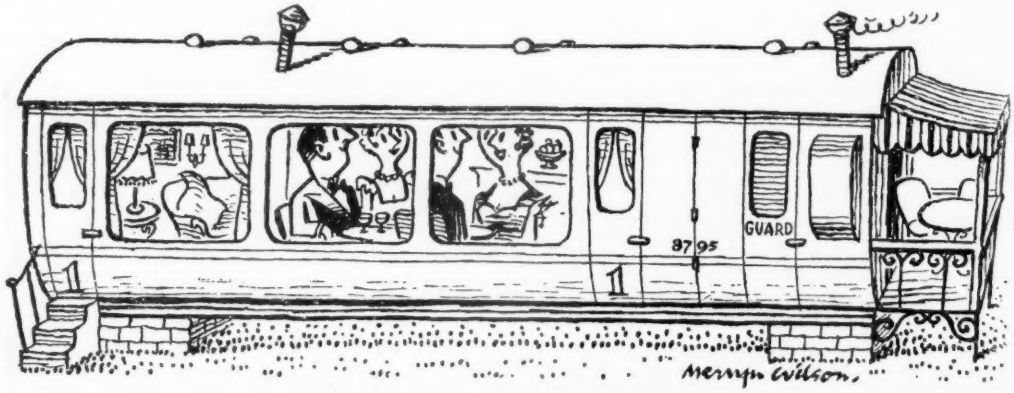
At Tonbridge, on Tuesday, defendant was fined £2, with £3 5s. costs, for leaving a carriage while the train was in motion.

The magistrate said: "His action was the most dangerous escapade I have ever heard of. The driver had to keep an eye on him as well as his signals. Nothing could be more serious. Defendant was quite sober. It is a wonder he is here today."

To that defendant said: "The driver did not have to look after me. I sat quietly on the back of the footplate. There was no question of being looked after."

* * *

The train that brought Bruce Woodcock, heavyweight champion of Great Britain, from Doncaster to London for his fight with Lee Oma this week was headed by Gresley streamline Pacific No. 60029, *Woodcock*.



"Shall we take our coffee in the guard's van?"

[Reproduced by permission of the proprietors of "Punch"

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

South West African Traffic Increase

Nine extra engines have had to be sent to South West Africa to cope with increasing rail traffic in the territory. The demand for wagons is still on a nation-wide scale, and, because of the difficulty of meeting traffic demands with available resources in South West Africa, temporary congestion occurred at some centres. With the special steps taken to meet the position, it is expected that conditions will now return to normal.

Eastern and Northern Transvaal low-veld perishable traffic was heavy throughout June, and seasonal railings are expected to remain at a high level. A peak demand for fruit trucks is at present being experienced, and it has been necessary to divert wagons from other categories for the fruit traffic, both in the Transvaal and the Western Province. Truck loadings continue to show substantial increases. During the four weeks ended May 29 the equivalent of 358,598 shorts were loaded, an increase of 21,204 over the corresponding period of last year. For the four weeks ended June 26 the total was 367,939, an increase of 6,433 over the previous year's figures.

Coal production during May showed an increase of 32,823 tons over last year. The total for the four weeks ended May 29 was 1,543,384 tons and for the four weeks ended June 26 1,516,452 tons, the latter representing a decrease of 80,022 tons on the previous year. Because of the sustained heavy demand for coal by internal consumers, shipment coal again showed decreases over the previous year, 193,310 and 166,264 tons respectively being shipped during the four-week periods of May and June this year. These totals are 67,427 and 84,718 tons lower respectively than the shipment coal totals for last year.

BELGIAN CONGO

Railway Problems

The present transport capacity of the 50 year old 3 ft. 6 in. gauge railway between Matadi and Léopoldville (227 miles) in the north-west of the Belgian Congo, described in the July 30 issue, is proving far below the increased requirements deriving from the economic development of the colony. The present rail-river-rail route between Matadi, the main port of the colony, and the important copper mining regions in the south-east, the Katanga, entailing two transhipments at Port Francqui, the northern terminus of the Katanga railway system, and Léopoldville, is slow and uneconomic.

With a view to improving transport between the coast and the Katanga region, the co-operation of the British-controlled Benguela Railway in the Portuguese colony of Angola has been enlisted. This 3 ft. 6 in. gauge line connects Lobito, on the Atlantic, with Texeira-de-Sousa, the frontier station in the south-eastern Belgian Congo, and is 837 miles long. Dilolo is the frontier station on the Belgian side, whence the line continues to Tenke, the junction with the Port Francqui-Elisabethville line.

An agreement recently concluded with the Benguela Railway facilitates the transport of the copper ore and tin ore mined in Katanga through Angola for shipment at Lobito. A similar agreement has been reached with the Rhodesia Railways and the railways of Mozambique for the ore to be conveyed over the line from Elisabethville to Bulawayo, Umtali (the frontier station in Southern Rhodesia for Mozambique), and the port of Beira, which recently passed into Portuguese State Administration. The route from the Katanga province to Beira is said to be 40 per cent. cheaper than that between the Katanga and Durban.

Cement and mineral oil are the chief commodities which will be conveyed to the Katanga over the Benguela Railway, and consignments held up at Matadi have been shipped to Lobito in transit for the Katanga region.

Temporary and Permanent Solutions

These solutions are only temporary. The difficult transport problems which impede the economic development of the Congo were studied by the special Senate Commission which visited the colony for the Belgian Congo railway jubilee, described in the July 30 issue. The commission's report recommends as a permanent solution the building of a 400-mile railway from Léopoldville to Port Francqui, and a line about 390 miles long connecting Stanleyville, in the north-east of the Belgian Congo where the Congo river turns west, with Costermansville, at the southern tip of Lake Kivu, in the frontier region bordering on Tanganyika. Lake and river steamers would connect Costermansville with Kigoma on Lake Tanganyika, the railhead of the Tanganyika railways.

Road transport also received much attention. Recently, the Belgian Colonial Administration acquired 5,000 Bailey bridge components from army surplus stocks in Belgium with the object of strengthening existing bridges in the Belgian Congo up to a maximum of 15 *tonnes*, and of replacing the few remaining ferries across some rivers.

CANADA

Canadian Pacific Results

A deficit of $4,106,939 for June is reported by the Canadian Pacific Railway. It is stated that the 17 cents an hour wage increase recently granted has been estimated as adding $27,200,000 to the annual cost of operations. The increase applies from March 1, and full provision for the retroactive proportion has been included in the account. Gross earnings for June amounted to $27,546,064, an increase of $1,080,950 over the $26,465,114 reported for June, 1947. Working expenses amounted to $31,653,003, compared with $24,696,426, an increase of $6,956,578. In June there was a deficit of $4,106,939 as compared with net revenue of $1,768,689 a year ago. For the first six months of 1948, gross earnings aggregated $160,829,880, against $150,825,408 for the corresponding period of last year, an increase of $10,004,472. Working expenses were $16,589,997 greater at $160,993,483, and the net deficit was $163,603 as compared with net earnings of $6,421,922 a year ago.

Freight Rates

Canadian railways, which increased freight rates 21 per cent. in April, applied on July 28 to the Board of Transport Commissioners for an interim increase of 15 per cent. in freight rates to meet minimum immediate requirements resulting from the 17 cents per hour wage increase granted in July and retroactive to March 1, 1948, and a permanent increase of 20 per cent. because of this and other sharply increased costs. Exceptions to the proposed percentage increase were rates on coal and coke, on which the increase was asked on a tonnage basis, namely, 10 cents a ton interim and 15 cents per ton permanent. Rates on grain and grain products moving between points in Western Canada are not affected. The application, filed by the Railway Association of Canada, used Canadian Pacific figures to show how costs of materials and supplies and scales of wages had gone up since the board granted a 21 per cent. freight-rate increase last March, and submitted that the needs of that company were typical of the needs of other association members. In making the application, the railways also stated that they proposed to submit a plan to equalise some class and commodity rates between east and west.

The annual increase in Canadian Pacific operating expenses from the 17 cent wage increase of July 14 was $27,223,000. It was pointed out that the full impact of the increased prices of materials and supplies in 1947 was not reflected in the cost of railway operations that year. It was on 1947 that the financial need for the 21 per cent. increase was calculated.

The application predicted a decrease in traffic volume for 1948 as compared with 1947, and gave C.P.R. traffic figures to show that for the months of March, April, and May this year revenue ton-miles of freight had decreased by 11 per cent. The estimated deficiency in C.P.R. revenues for 1948 was $42,149,000.

UNITED STATES

Floating Dry-Dock for Erie Railroad

The Erie Railroad now has a fleet of over 230 vessels plying in and around New York harbour. They are none of them very large, but their maintenance has involved many problems in recent years. Now the company has purchased a new 400-ton floating dock 110 ft. in length. It is worked by a crew of six, and when submerged can be pumped out and raised in about 50 min.

Revised Chicago Subway Plans

The Chicago subway authorities now have decided not to build the proposed terminal loop at Congress Street, east of the Chicago River. Instead, a revised programme has been agreed on with S. A. Healy & Co., contractors, and its sanction by the City Council is awaited. This entails the construction by the same contractors of twin tubes under the river at Congress Street, the estimated cost of which is about £370,000, which sum will be offset against the contract for the terminal loop now cancelled.

SWITZERLAND

Private Railways Results

Working receipts of the Berne-Lötschberg-Simplon Railway in 1947 totalled fr. 18,970,000, or fr. 1,900,000 more than in the preceding year. Working expenditure amounted to fr. 12,830,000, or an increase of fr. 695,792 on 1946.

The fine summer of 1947 brought a considerable increase in the traffic of the Montreux-Bernese Oberland Railway, and the working receipts for 1947 were 13·7 per cent. higher than in the preceding year (fr. 3,295,000 against fr. 2,896,400). This is a new record. On the other hand, working expenditure rose by more than 23 per cent., from fr. 2,500,400 in 1946 to fr. 3,119,500.

The passenger traffic of the 27·3-mile metre-gauge Visp-Zermatt electric railway, also benefiting from the fine summer of the past year, marked a new record in the number of passengers carried in 1947, totalling 334,220 as compared with 272,713 in 1946, and 265,513 in 1945. Passenger receipts rose to fr. 1,370,000 in 1947 as against fr. 1,148,881 in 1946. Total working receipts in 1947 were fr. 1,820,000 (fr. 1,571,906). Working expenditure amounted to fr. 1,310,000 (fr. 1,078,841). There was a credit balance of fr. 225,805 as compared with fr. 218,340 for 1946.

Federal Railways Results

During the' first six months of the current year, the Swiss Federal Railways carried 109,963,000 passengers, as compared with 106,009,095 for the same period of 1946. Luggage, livestock, goods, and mail totalled 9,508,704, as against 8,314,471 for 1946. Passenger receipts totalled fr. 133,468,971, an increase of about 6½ per cent. on the total of fr. 124,998,828 for the first six months of 1946. Luggage, livestock, goods, and mail receipts aggregated fr. 177,682,410, as compared with fr. 157,859,629 for the first six months of 1947.

The total traffic receipts amounted to fr. 311,151,381, as compared with fr. 282,858,457 for the same period of 1947. Inclusive of miscellaneous receipts, the grand total of the working receipts for the first half of the current year was fr. 333,491,460, about 10 per cent. more than that for the same period of 1947 (fr. 303,771,458).

Restoration of the "Glacier Express"

The "Glacier Express," inaugurated in the summer of 1930, on the completion of the narrow-gauge line from Visp to Brigue, provided a through service in the summer from Zermatt to St. Moritz over the Visp—Zermatt, Furka—Oberalp, and Rhaetian Railways until the outbreak of war. From July 1 to August 31 this year it was restored, with the difference that it became an all-electric service, the Brigue—Disentis section of the Furka-Oberalp Railway having now been electrified, with a saving of time of two hours on the through journey. The Furka-Oberalp, which forms part of the longest continuous metre gauge railway link in Europe, is the most direct route from the Rhone Valley to Central and Eastern Switzerland.

U.S.S.R.

Railway Electrification

According to a recent statement by the chief of the electrification department at the Ministry of Communications, the electrification programme within the framework of the current Five Year Plan (1946-1950) comprises 4,570 route-miles (7,360 km.). The longest line to be electrified is the 1,459-mile main line (almost wholly double track) from Novosibirsk *via* Omsk, Kurgan, and Chelyabinsk to Ufa (Southern Urals), which carries an extremely dense coal traffic from the Siberian Kuznetzk coalfields to the concentration of heavy industries in the Urals. Generally, the present policy of conversion is to give priority to those main lines used chiefly for the supply of fuel and raw materials to industrial areas.

During the first two years of the Plan, it is announced, five main-line sections and a suburban line were electrified: Moscow—Domodyedyev, on the main line for Voronezh and the Don basin; Podolsk—Lvovskaya, on the Moscow—Kursk main line; Syetun—Odintzovo, on the main line from Moscow (Brest) to Smolensk, Minsk, and Brest; Tallinn—Pjaskyula, 7½ miles, on the line from Tallinn to Haapsalu. This section had been electrified by the Estonian State Railways in 1932 and it must be inferred that the electric system was either dismantled or wrecked during the war; Zlatoust—Berdyayush, 24·8 miles, on the Zlatoust—Ufa main line, the westernmost section of the line from Novosibirsk mentioned above. The introduction of the electric service on this section was reported in *The Railway Gazette* for November 14, 1947; Leningrad—Oranienbaum, 25·6 miles, from Leningrad (Baltic Station) along the southern shore of the Finnish Gulf.

In the current, third, year of the Plan the re-electrification of the line between Dolgintzevo and Nikopol (*via* Krivoj Rog and Apoctolovo), 50 miles, has begun. This line, destroyed by the Germans, is important for its iron ore and manganese ore traffic. The electrification of the Bolshevo—Fryazino section of the double-track Moscow—Yaroslavl main line has been completed. In the Caucasus, the electrification of the Rioni Kutais—Tkvibula mountain line, 27·9 miles long, was completed some time ago. This branch line leads north from Rioni on the Tbilisi (Tiflis)—Poti main line, and has extremely steep gradients and many sharp curves.

New Main Line in Bashkiria

In December next a new main line in the Bashkir Republic (Southern Urals) connecting Ishimbay with Jermolayevo is scheduled for opening. The building of this line was begun by the middle of June last, and it is now reported that about half of its earthworks have been completed. Track-laying and station building have begun.

The lines mentioned in these notes will be found in the Russian railway maps published in *The Railway Gazette* for December 10, 1943 (pp. 584, 585), and May 25, 1945 (p. 526).

Publications Received

A Practical Evaluation of Railroad Motive Power. By P. W. Kiefer. Published and distributed by the Steam Locomotive Research Institute, Inc., New York, and obtainable from the Simmons-Boardman Publishing Company, 30, Church Street, New York. 8¾ in. × 5½ in. 65 pp. Illustrated. Price $2.—The substance of this brief but attractively produced book, was published as the author's contribution to the authoritative group of papers published by the Institution of Mechanical Engineers last year, on the occasion of their centenary. Certain additions have been made, and the present work also includes a foreword by Mr. P. J. Ennis. The author devotes chapters to steam, gas-turbine, electric, and diesel-electric locomotives, and then provides some valuable comparisons—particularly between steam and diesel traction—in a chapter headed "Motive-Power Potentialities." The figures given are most illuminating, if only to bring home to non-American readers the enormous mileages which can be attained on specially arranged turns of duty. The author's world-wide reputation as an authority on locomotive design naturally places his figures beyond question; and indeed, one is struck by his scrupulous fairness in all the comparisons between different forms of motive power. It is a little disappointing, however, to learn that he gives "modern" reciprocating steam engines an overall efficiency so low as 6 per cent., as compared with 17 per cent. for electric and 22 per cent. for diesel-electric. In Great Britain, considerably better figures have been attained during tests on steam locomotives, which Mr. Kiefer probably would not regard as "modern," especially in view of the absence of high superheat, feed-water heating, thermic syphons, and other American aids to increased efficiency. Mr. Kiefer's conclusion, however, is that "No all-inclusive formula can be presented which would provide, *per se*, a conclusive answer to the question of motive-power selection, and, because the field of speculation is strewn with pitfalls, there is no substitute for the salutary lessons of experience." Locomotive engineers and railway administrators alike will profit from a careful study of this thoughtful and stimulating essay, which so admirably summarises the present-day American viewpoint. If a similar essay were written from the corresponding British point of view, it would make an extremely valuable companion.

Britain's Big Four. The Story of the London Midland & Scottish, London & North Eastern, Great Western, and Southern Railways. By Horace Greenleaf. London: Winchester Publications Limited, 16, Maddox Street, W.1.—9¾ in. × 7¼ in. 228 pp. Fully illustrated. Price 21s.—The diversity of modern railway operation is such that the layman is offered a really broad sphere of topics to engage his interest, and he often is able to select a particular aspect suited to his taste. In presenting this survey of Britain's four main-line railways at the close of the grouping era, the author has endeavoured to encompass every item of railway fascination and he has succeeded in giving something more than a general survey, for although he only samples the several ingredients, he always imparts something of their intimate flavour. The book is in three parts which may be summarised as covering the historical, the mechanical, signalling and permanent way, and finally, organisation, operation and ancillary services. A fine series of illustrations is presented, though the captions, extracted from the text, in some cases are unhappy.

Meet the South African Railways.—We have received from the Commercial Representative in London of the South African Railways an illustrated booklet which has been published to make travellers familiar with the wide variety of transport services provided by the South African Railways & Harbours Administration. An introductory paragraph points out that many people in South Africa still remember the days when the only available transport was the stage coach or the ox-wagon; and, indeed the first railway locomotive was not imported into the country until 1859. Today the S.A.R. & H. Administration not only operates the railway system, but all the South African deep-water harbours, the national airways, a vast road transport undertaking, and a multitude of ancillary services. Special mention is made of the ingenuity which has been applied successfully to providing locomotives of great power within the limitations of the 3-ft. 6-in. gauge, and to the conversion in recent years of 584 route-miles of the system to electric traction. A further 322 route-miles are to be converted similarly.

Handling of Goods Sundries in Railway Depots

Direct discharge of received sundries and transhipping by perambulation

(By a Correspondent)

IT is a matter for regret that in recent discussions on goods handling there is a tendency to omit any reference to the method of perambulation for dealing with less-than-wagon-load traffic received at railway goods and transhipping depots. Many of those who have devoted much time and study to goods depot work have been led to believe that at least a *prima facie* case has been made out for the adoption of perambulation in medium-sized goods sheds. Indeed, the impression conveyed by the Eastern Region after much experiment has been such as to induce them to go forward with certain major schemes of a more or less permanent kind.

It is imperative, therefore, that the case for perambulation should not go by default for want of adequate presentation and subsequent consideration. A clear understanding of perambulation as practised on the old L.N.E.R. is essential, lest it be assumed erroneously that the non-introduction of further schemes by the L.M.R., which has also experimented with the idea, is indicative of its limitations. The contrary is the case, the reason being discernible in the rigidity of the one method using special-type vehicles, and the unlimited elasticity of the other which, by using standard-type cartage units as "internal movement vehicles," can readily be made to conform to traffic fluctuations.

L.N.E.R. Method Described

For the benefit of those unfamiliar with perambulation, a brief description of the L.N.E.R. method is given below:—

A rake of wagons of inwards sundries is set on the shed siding.

Town delivery motors and mechanical-horse trailers are set in round order in a line parallel with the wagons some 20 or more feet away.

Standard mechanical horses and trailers to the number required for the day's traffic are used as internal movement vehicles.

At the start of work two or more wagons are opened up: an I.M.V. draws alongside each and the driver and the porter or loader load the vehicle with goods one tier high, label uppermost, sorting them roughly in order.

When loaded the I.M.V. proceeds in a rotary movement to the side of the delivery trailers, calling at each in turn and shedding the goods appropriate to each, the checkers on the delivery line being assisted by the I.M.V. staff.

On reaching the end of the delivery line, the empty I.M.V. returns to the wagons and the process is repeated.

Meanwhile, the checkers at the delivery trailers having received their goods, check them to delivery sheets and stow them in order of delivery.

An important feature of perambulation schemes of this kind is the extent to which they become popular with the staff who have to work them; a vital factor and predisposing to their success. Perambulation lends itself to many variants, but its greatest strength lies in its use of standard equipment by which it is capable of dealing readily with traffic peaks. Conversely, immediate economies can be made by switching to other cartage work at their own depot or elsewhere such I.M.Vs as may not be needed because of a temporary fall in traffic levels.

Manifestly no claim is made that perambulation is the last word in goods sundries handling, but it is efficient. It is perhaps the only method capable of accelerating discharge without subsequent idle standage of costly equipment. It improves hours per ton figures and carries with it the overriding advantages of being capable of introduction and operation without the expenditure of capital of an irrecoverable nature. It is workable in either adapted sheds already in existence or in new goods sheds which could readily be used for any new and more efficient method of goods handling.

First hand knowledge of perambulation is not available in at least three of the railway Regions, and it is therefore somewhat surprising now to learn that "There is good reason to anticipate that the principle of conveyor working will be embodied wherever practicable in future reconstruction schemes." Particularly is this so since conveyor working is as yet an unproven method and one which certainly does not meet the second criterion propounded, *i.e.*, speed of handling.

Unfortunately, in assessing the relative merits of perambulation and conveyor working undue prominence seems to be given to comparative running costs and "hours per ton" figures; inadequate regard being paid to the inordinately high capital expenditure on conveyors and the special plant required to work with them such as closed loop capstans, etc. More serious still is the hidden cost of terminal delays arising from the fact so much of the conveyor type of mechanisation can operate efficiently and economically only on a basis of extended shifts. Now that much useful work is being expended on improving freight train services and an acceleration of hours rightly regarded as an achievement, it is a thing indeed to be deplored if for something like 20 per cent. of the traffic at least, a full day is lost at the receiving point because an unloading machine must be kept going until late in the afternoon.

For obvious reasons it is not worth while using conveyor plant if it is to stand idle for a large part of each day. Therefore with the object of securing economical operation pools of traffic are created euphemistically referred to as "reservoirs of work." In a goods and transhipping depot laid out for conveyor-cum-flat operation, the significance of this feature will be appreciated when it is realised that not one but three distinct pools are usually maintained. These consist of (*a*) a pool of wagons held as a station reserve in the yard, (*b*) a pool of traffic held on flats intermediately between belt and delivery vehicles, and (*c*) a pool of transhipping traffic awaiting the availability of checkers on the forwarded side. While continuity of handling work is certainly obtained from the maintenance of the pools, it is equally certain that a minimum of 20 per cent. of the traffic is delivered late, and unfortunately it is on this percentage alone that railway efficiency is judged by the public.

Limitations of Conveyor System

Quite apart from policy, the simple conveyor system has definite practical limitations in its use at medium-sized stations. The first of these consists of its inelasticity, since it is clear that wherever one belt only is installed it is impossible further to increase the station throughput as a whole, once the capacity of the single belt has been reached. Even if a financial case could be made out for a second belt, its provision and installation could not be expected for months. Moreover, the physical accommodation for a second belt and the necessary arrangement of simultaneous feed of traffic to one set of delivery vehicles would be in most cases an insurmountable difficulty.

The second limitation of the conveyor lies in the admitted fact that as yet no one has demonstrated the ability of a conveyor belt to feed direct to a large number of cartage rounds, and, while maintaining a reasonable check, avoid a pile-up at the end of the conveyor. The realisation of this difficulty is seen in the suggestions put forward to meet it by instituting a subsequent perambulation by I.M.Vs between belt and delivery vehicles.

In the continuing process of research and experiment it must be admitted that the last word is far from being spoken on goods handling. Such being the case it seems clearly essential to avoid too great a reliance on a method which many consider is unlikely to stand the test of time, and which, in the case of the larger conveyor-cum-flat depot, will involve in the aggregate a big capital expenditure which would require much courage to write off, however out-moded the system might well become in a few years time. It seems but prudent then in this period of development and rapidly changing ideas seriously to consider the merits of perambulation as practised by the old L.N.E.R., not only for certain immediate schemes, but also, for provisional interim operation at depots where doubt exists as to the rightness of adopting any of the known methods as a finality.

WARTIME TANK WAGONS TO CARRY STEEL.—One hundred and sixteen 50-ton Warwell rail wagons, specially built for the wartime movement of tanks and heavy armoured vehicles, are to be purchased from the Ministry of Supply by the Railway Executive and will be converted for carrying steel. The conversion work is to be spread over workshops in various Regions.

CAST-IRON PIPES FOR HYDRAULIC POWER.—The British Standards Institution has published a revision of B.S.44, Cast-Iron Pipes for Hydraulic Power. In revising the standard the opportunity has been taken to refer to the new grade of cast iron covered in B.S.1452, which constitutes a combination and revision of B.S.321, Grey Iron Castings, and B.S.786, High-Duty Iron Castings. Copies of B.S.44:1948 may be obtained from the Sales Department, British Standards Institution, 24, Victoria Street, London, S.W.1, at a cost of 3s. each.

NEW CUSTOMS SHIPPING BILL.—A new Customs shipping bill, numbered 63 A (Sale), has been introduced for use where goods exported under licence are entered with the Customs before shipment solely by reason of export licensing requirements. Supplies of the new form may be obtained from H.M. Stationery Office or through the usual agents, but, the Board of Trade states, exporters and agents holding stocks of shipping bill No. 63 (Sale) specially over-printed for use in entering goods for shipment under export licence may continue to use those in place of the new form for a reasonable period.

The Bombay, Baroda & Central India Railway

A brief general description of the system, its history and equipment

THE Bombay, Baroda & Central India Railway as at present constituted has been, since December 31, 1905, the property of the Government of India, but from that date until December 31, 1941, it was worked by a company on behalf of the Government; since January 1, 1942, it has been worked as a Government railway. Like so many other lines in India, it has grown up as a result of amalgamations of comparatively small railways, in this case of three different gauges. Even now, the administration is responsible for working an appreciable mileage of line belonging to Indian States and companies, in addition to the property of the Government of India. The route-mileage is made up as follows:—

5 ft. 6 in.	...	1,198 miles (in addition to 69 miles worked for Indian States).
Metre gauge	...	1,879 miles, and 106 miles worked for Indian States.
2 ft. 6 in.	...	152 miles worked for Indian States and various companies.

B.B. & C.I.R. trains also have running powers over some 147 miles of "foreign" lines. Of the 3,469 total route-mileage, 250 miles are double and 22 miles quadruple track.

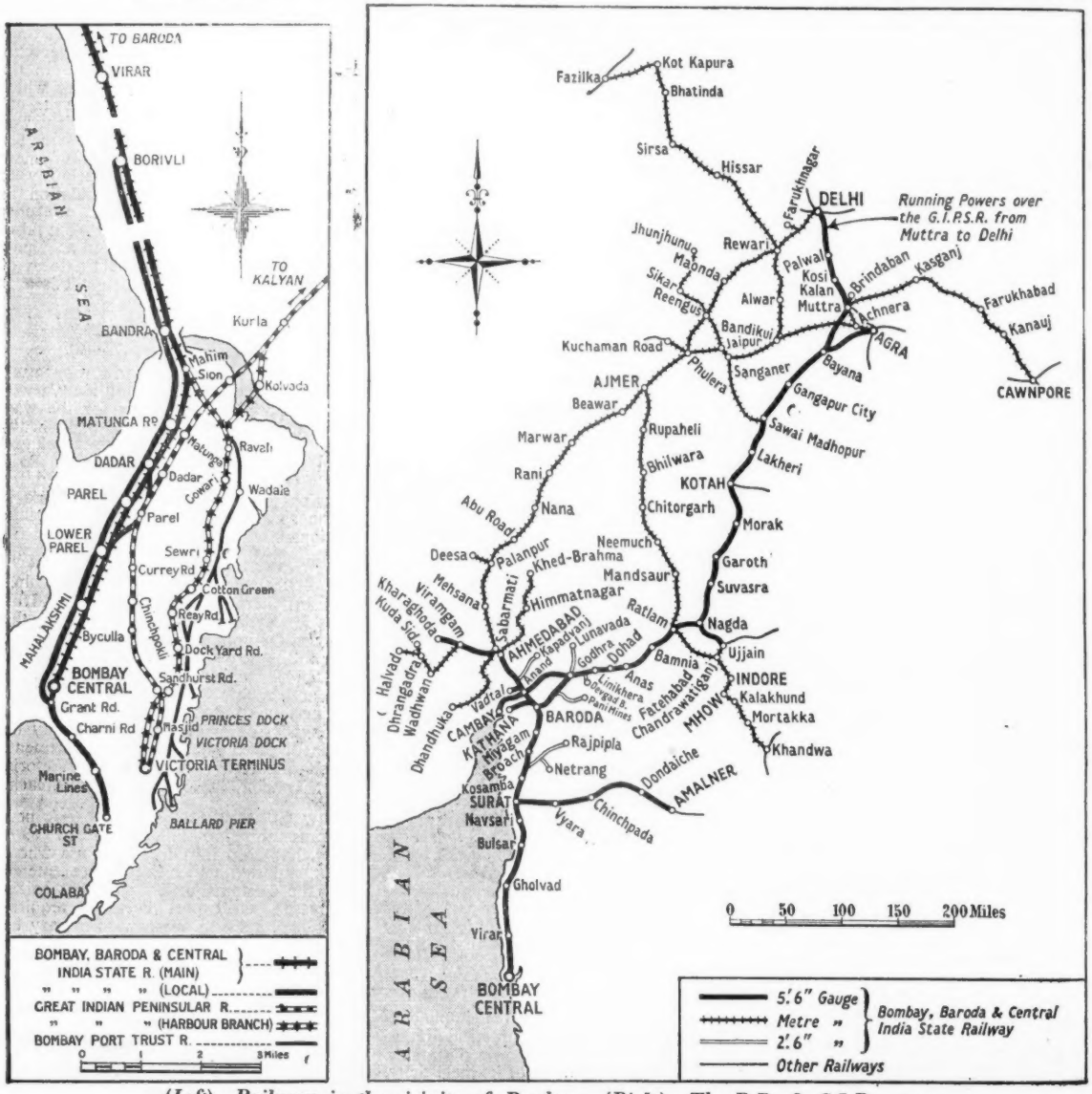
The original 5 ft. 6 in. gauge line was owned by a company registered in 1855, but when the State purchased it in 1905, the Rajputana-Malwa metre-gauge State Railway was amalgamated with it. A new company was formed to work the combined system on behalf of the Government under a principal contract of 1907 and a revised contract of 1913. This company's capital amounted to £2 million on which, under the principal contract, the government guaranteed 3 per cent. interest.

The Broad-Gauge System

The accompanying sketch map shows that the broad-gauge main line runs from Bombay up the west coast to Baroda, the capital city of the Indian State of that name. Here, the two trunk lines bifurcate, the north-east main line continuing through Godhra, Rutlam, Nagda, Kotah, and Bayana to Muttra Junction, whence B.B. & C.I.R. trains have running powers over the Great Indian Peninsula Railway main line to Delhi, 90 miles from Muttra. This is the shortest broad-gauge route between Bombay and Delhi, and the Frontier Mails (formerly) to and from Lahore and Peshawar run over it daily.

The 35 miles from Churchgate to Virar in the Bombay suburban area are electrified, and extension of the electrification to Baroda has been proposed; this would provide a continuous electrified section of about 240 miles.

From Baroda the north-west main line runs through the great industrial centre of Ahmedabad to Viramgam and Kharagoda. The section from Churchgate to Ahmedabad was opened in stages between 1860 and 1870. The original Bombay terminus was at Grant Road, but was transferred subsequently to Colaba at the southern tip of the island of Bombay. Construction on the north-east main line



(Left) Railways in the vicinity of Bombay. (Right) The B.B. & C.I.R. system

from Baroda did not begin until 1896 when the Godhra-Nagda section was opened and extended to Baroda. In 1909 it was continued from Nagda to Muttra junction, through running between Bombay and Delhi *via* Baroda then becoming possible.

In 1930 Bombay Central was opened as the main line terminus, Colaba terminus was closed and the rails between

Jaipur junction station, metre-gauge system. B.B. & C.I.R.

it and Churchgate were removed. The local lines still continue south of Bombay Central to Churchgate where the administrative offices of the railway are situated. This section is double track, but from Grant Road quadruple track extends to Borivli. All four tracks are electrified as far as Bandra, the local lines thence to Borivli and the double line onwards to Virar. A fast service is run during the rush hours over the through lines which are used jointly by steam and electric trains south of Bandra.

Metre-Gauge System

Beginning at Ahmedabad the metre-gauge line runs northwards through Baroda State and Rajputana, *via* Abu Road (for Mount Abu), Ajmer, Jaipur, and Rewari to Delhi. There are extensive branches from Rewari to Bhatinda and Fazilka, Ajmer to Ratlam and Khandwa, and Achnera (near Agra) to Cawnpore. A branch of the main line from Bandikui goes to Agra Fort. Connection is made with the metre gauge system of north-east India at Cawnpore, Oudh & Tirhut State Railway, enabling through running to be made from Ahmedabad to northern Bengal and Assam.

The metre gauge (formerly Rajputana-Malwa) main line from Delhi to Jaipur was completed in 1874; the section from Jaipur to Ajmer was opened in 1875, and that from Ajmer to Ahmedabad in 1881. The 2 ft. 6 in. gauge lines act as feeders to the main-line system.

Administration

The General Manager, Chief Engineer, Chief Traffic Manager, Chief Accounts Officer, Chief Medical Officer, Traffic Superintendent, and Deputy Chief Engineer, Signals, have their headquarters at the Churchgate offices, but metre-gauge administrative offices exist at Ajmer where the Engineer-in-Chief, Locomotive, Carriage & Wagon Superintendent, Deputy Chief Accounts Officer, Traffic Superintendent, and the Treasurer are stationed. In many respects the two gauges are worked as separate railways, each having its own administrative officers directly responsible to the General Manager.

The broad gauge permanent way consists of 82-lb. bull-head section and 90-lb. flat bottom rails laid on deodar, jarrah, sal, oval pot, and steel trough sleepers. The ballast is of broken stone, gravel, and shingle. The ruling gradient is 1 in 500. On the metre gauge main line 60-lb. flat-bottom rail is used on wooden and steel-trough sleepers, with stone, kunker, sand, and, hard quartz ballast. The section Delhi-Rewari has been relayed with 75-lb. rails, and programme replacements for other sections are in hand. From Ahmedabad to Delhi the ruling gradient is 1 in 150; the line runs through the valley of the Aravali hills from Palanpur to Rewari, a distance of 404 miles. The branches from Ajmer to Khandwa (393 miles), Cawnpore to Achnera (239 miles), and Rewari to Bhatinda (186 miles) are laid with 50-lb. section rail on wooden sleepers. The Bhatinda-Fazilka section has 41¼-lb. rails. On the Mhow line between Patalpani and Kalakund there is a heavy *ghat* section with a 1 in 40 ruling gradient where banking engines are used.

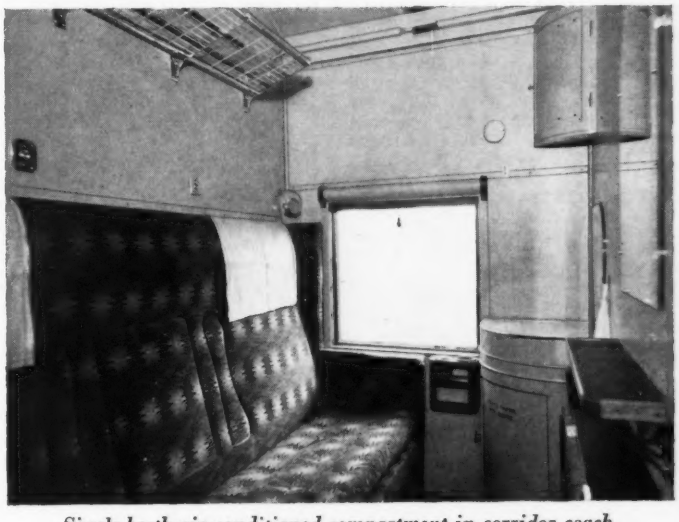
Rolling Stock

Many vehicles were sent overseas in the early part of the war, but have been returned, and locomotives and wagons have been augmented by supplies from the U.S.A. The present figures are:—

Broad gauge—	
Electric motor coaches (multiple unit) ...	40
Electric trailer coaches	120
Locomotives	375*
Coaches	882
Wagons	10,584
* Includes 2 electric and 10 diesel locomotives.	
Metre gauge—	
Locomotives	437
Coaches	1,335
Sentinel coaches	3
Wagons	9,127
Narrow gauge—	
Locomotives	20
Coaches	58
Wagons	259

Large locomotive and carriage workshops exist on both gauges and employ many thousands of Indian workmen. The B.B.C.I.R. for many years has built some of its own metre gauge locomotives; recently some of both gauges have been built for other railways. Carriages and wagons also are constructed.

The local section, Churchgate to Virar, has three-aspect colour-light signalling controlling both local and fast tracks. Continuous a.c. track circuiting is used throughout, and there are automatic signals. The interlocking at Bombay Central terminus is operated from a 119-lever electro-pneumatic frame. Signals are three-aspect colour-lights, and points are worked pneumatically from 60-lb. air mains. The air-compressing plant is housed in the yard. Bandra station, ten miles from Bombay, has all-electric point machines and colour-light signals. The power frame is all-electric and has 101 levers housed in a modern ferro-concrete structure. Colour-light signals are provided over 38 miles of line, 25 miles of which are quadruple track; this is believed



Single-berth air-conditioned compartment in corridor coach

Signal cabin at Bandra, B.B. & C.I.R.

to be the most extensive colour-light installation in India.

On the double line north of Virar each station is fully interlocked with one or two signal cabins. Block working is performed on Tyers three-position one-wire instruments. North of Baroda, on the broad gauge and on almost all sections of the metre gauge, Tyers No. 7 tablet instruments are used. Small unimportant branches are worked on the train wire (paper line-clear) system. Roadside stations are interlocked or semi-interlocked and all important stations on the single line are fully interlocked. At Mehsana and Bandikui on the metre gauge system, large electro-mechanical installations are provided, with complete track circuiting, electrical replacement of signals and route indicators.

On the broad gauge system the Deputy Chief Engineer, Signals, supervises signalling and interlocking and is responsible to the Chief Engineer, Bombay. On the metre gauge the Signal Engineer is responsible to the Engineer-in-Chief at Ajmer.

The Signal Engineers are responsible for the maintenance and construction of all mechanical and electrical signalling, the traffic control telephone system, local telephone exchange and automatics, electric clocks and other adjuncts, and the main and inter-telegraph circuits.

The traffic control telephone system has been considerably extended since the war. Previous to this only section control was in use, which meant that every way station was on the circuit and the obtaining of stock figures and other daily routine information was held up by other more urgent information. Deputy Controllers' circuits are now being run, which are really traffic control trunks with only important stations connected to them. This enables the Traffic Controller or the District Traffic Superintendent to converse with the more important stations on the district without stopping the work of the section control.

The B.B.C.I.R. also has a comprehensive radio network which enables important telegrams to be diverted from the land lines and transmitted by wireless. It also is of great value during interruption of communications by ordinary land lines due to storms or other causes. The maintenance of wireless stations on both broad and metre gauge systems, of which there are many, is the responsibility of the Deputy Chief Engineer, Signals, Bombay.

A reorganisation scheme is under consideration comprehending one Chief Engineer for both gauges, in which event the Deputy Chief Engineer, Signals, would become responsible for signalling and communications on the whole railway.

Train Services

As on other railways all over the world, train services had to be heavily curtailed in wartime, but goods traffic steadily increased. All passenger trains cancelled during the war have now been restored, and in several cases additional trains run. At one time the B.B.C.I.R. ran the fastest train in India, the "Frontier Mail" between Bombay and Delhi. The "Flying Ranee," a light fast passenger train, was a close rival, and probably exceeded the "Frontier Mail" for maximum speed over short distances. From Bombay to Delhi *via* Ahmedabad and the metre gauge system is 848 miles and *via* Muttra, all broad gauge, 865 miles. The all-broad-gauge route is quicker. Over the 539 miles of the metre-gauge part of the route *via* Ahmedabad, however, the maximum speed is 45 m.p.h. The Great Indian Peninsula route from Bombay to Delhi entails climbing or descending the Western Ghats near Bombay and is longer. Mail trains are run to Delhi and the Punjab by both the B.B.C.I.R. and the G.I.P.R. routes.

Kathgodam-Agra metre-gauge express at Agra, B.B. & C.I.R., hauled by 4-4-0 locomotive "Lord Kitchener"

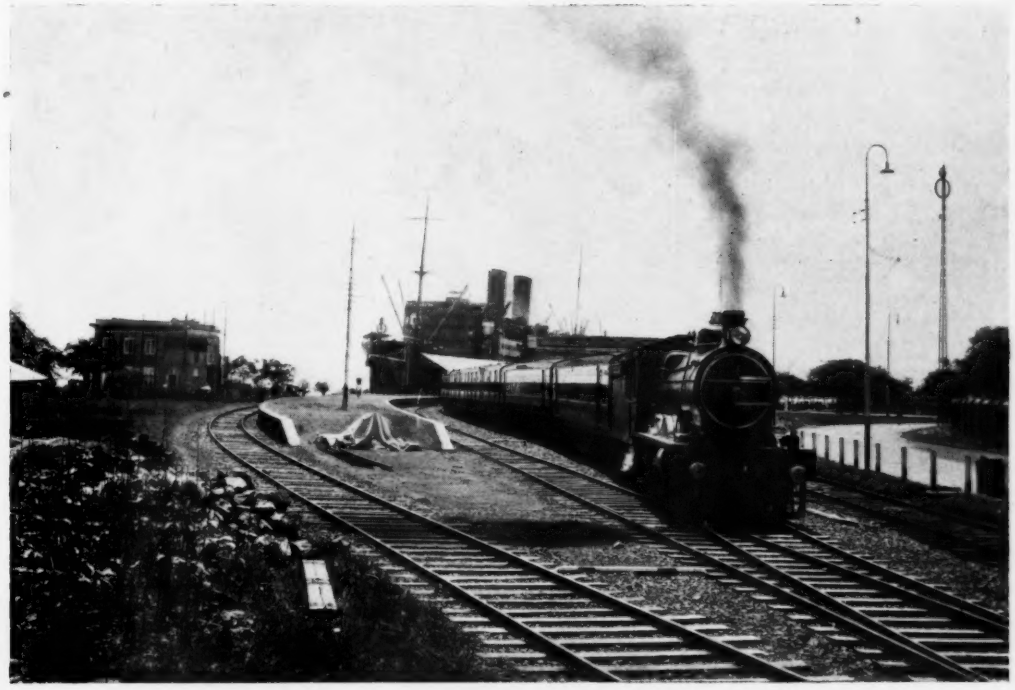
The B.B.C.I.R. has a large post-war construction programme covering track and rolling stock renewals, improvement to bridges, remodelling of station yards, etc., which will provide a very great deal of work for many years to come.

HUNGARIAN RAILWAY EXPORTS.—Railway material forms a prominent part of the Hungarian export trade, and agreements concluded after the war with Yugoslavia, Poland, Roumania, the Soviet Union, and other countries cover important items of railway material to be supplied by Hungary. That recently concluded with Argentina, which is in force until the end of 1952, contains also provision for the supply of railway material to that country, and that with Holland concluded on December 13, 1947, and lately extended for a further period and revised, includes important items of rolling stock and other railway equipment. Before the war, the Hungarian railway industry occupied an important position in certain railway markets, including South East Europe and South America.

INTER-ZONE POSTAL SERVICES IN GERMANY.—It is reported that the British and Soviet authorities have agreed to re-establish a regular rail postal service between the two zones. Under the agreement, letters and parcels, but not goods, may be carried. The first mail train from Berlin to the West since the blockade began in June arrived at Hanover on September 11. Only a few postal wagons had been travelling from time to time between the two zones.

NATIONALISATION OF ROUMANIAN TRANSPORT.—Under a new Roumanian law all transport is to be nationalised, and a State-owned corporation is to be set up, with transport agreements between it and other similar organisations abroad. Hitherto only the railways and Danube shipping have been owned by the State.

The Bombay, Baroda & Central India Railway



First portion of the "Frontier Mail" express leaving Ballard Pier Station, Bombay

Bombay Central Terminal, B.B. & C.I.R.

High-Speed Renewal of Formation, Denbigh Hall, London Midland Region

Two-day absolute occupation of main lines for blanketing of track

Bulldozer clearing old ballast from the site

AT Denbigh Hall, near Bletchley, 48 miles from Euston, on the London Midland Region main line, the four tracks run through a deep clay cutting. In 1940, a serious slip occurred on the west bank of the cutting alongside the down fast line. This was dealt with by trimming back the slope to a flatter angle, but it was not possible, at that time, to improve the formation under the fast lines. Water pockets in this formation kept the clay soft, and although ash ballast was used to blanket the clay, track maintenance was very difficult, and permanent speed restrictions had to be imposed.

The renewal of the formation for a length of 220 yd. under both fast lines was undertaken recently, and involved the excavation of 1,500 cu. yd. of clay and ashes to a maximum depth of 4 ft. below rail level. The new formation was trimmed to a cross-fall of 1 in 20 to a new drain laid in the cess of the down fast line. A layer of fine sand 4 in. thick was spread over the new formation, and mixed sand and gravel was then laid to an average depth of 2 ft. 6 in. Granite ballast on this filling carries the tracks. Preliminary work included the laying of the new drain, the provision of a temporary siding on the down fast side, and the replacement of a telegraph pole route by a cable over the length of the job.

Special arrangements were made by the Operating Department to give a 49-hour possession of the fast lines, so that the main work of excavation and sand filling could be carried out in one operation. To do the work in the time available, mechanical plant was essential, and four draglines and two bulldozers were used. A contract was let to Leonard Fairclough Limited for this part of the work. The excavated material was removed, and sand and ballast brought to the site in 22 material trains, for which 450 wagons and 12 engines were required. A train of special vehicles had to be used for bringing the draglines and bulldozers to the site.

Unloading and spreading sand in the excavation

Four railway departments and the Contractors were concerned in the organisation of the main operation, and several meetings were held to draw up the working programme. The work was outlined, and general arrangements agreed, at a preliminary meeting. Details were settled at a series of smaller meetings between the Engineer's Department and the other Departments concerned, and a final meeting of Contractors and all Departments was held to confirm the arrangements. Copies of the plans and the working programme were distributed to all concerned, and studied closely. Other meetings were held by the Engineer's Department and the Operating Department at which the details were explained to the Supervisors, Inspectors, and Gangers, who were to carry out the work.

Time for Completion

The renewal was completed successfully between 4 p.m. on Saturday, July 10, and 5 p.m. on Monday, July 12, when the fast lines were re-opened for traffic. A speed restriction was maintained until the tracks were completely consolidated. The weather during the week-end was cool and showery, but fortunately there was no heavy rain.

Highly detailed arrangements were made by the Operating Department, both for the working of material trains to and from the site, and for diverting main-line traffic to the adjoining slow lines. These arrangements worked extremely well. The service of material trains was excellent, and the delays to main-line traffic were very small. A number of freight trains had to be cancelled, but special arrangements were made to deal with these services before and after the week-end, and by diversions from the Southern Region to the Midland Division of the London Midland Region.

The work in its final stages. The up line has been relaid

FILMS AND SCIENTIFIC RESEARCH.—A one-day conference on "The Film in Scientific Research" will be held at the Royal Institution of Great Britain, 21, Albemarle Street, London, W.1, on October 12, from 10 a.m. to 9.30 p.m. It is being arranged by the Sciences Committee of the Scientific Film Association. The programme will include a discussion of the use of the film as a research tool, the informative character and educational value of research films and the technical aspects of the use of films as research instruments. Material suggested for discussion and any information as to the existence or availability of any research films suitable for showing at the conference may be sent to the Honorary Secretary of the Sciences Committee of the Association, 34, Soho Square, W.1.

New Scammell Mechanical Horse

The Scarab motive unit for local collection and delivery available as a 3-ton or 6-ton unit

The 6-ton Scarab with an 18-ft. trailer

SCAMMELL Lorries Limited, which has some 15 years' experience in the design and construction of the mechanical horse, recently demonstrated at its Watford Works the new Scarab motive unit for local collection and delivery. The new unit is available as either a 3-ton or 6-ton model, and a distinctive appearance has been achieved that is both original and within the accepted canons of English design.

The engine, clutch, gearbox, and driving axle in both models are built on the unit construction principle, mounted at the front on a large rubber bush. The 6-ton Scarab has a 4-cylinder side-valve 4-stroke engine, $3\frac{7}{16}$ in. bore × $3\frac{7}{16}$ in. stroke, 2,090 c.c. capacity, which develops 45 h.p. at 3,200 r.p.m., and is interchangeable with the 3-ton except for the carburettor and inlet manifold. Lubrication is by the dry sump principle from a submerged gear pump mounted on the near side of the crankcase. The single dry-plate Borg & Beck 9½-in. knife-edge clutch is housed in an aluminium bell housing, and the gearbox has four forward and one reverse speeds, each ratio except reverse and first being engaged by dogs.

In the 6-ton model, the back axle is of the double-reduction full-floating type, and all shafts are mounted on anti-friction bearings and hubs on Timken taper roller-bearings. Except for the axle pot and half shafts, the arrangement is the same in the 3-ton unit, which has the Girling brake, 12 in. by 2½ in., interchangeable with the M.H.3 carrier brake. Brakes on the 6-ton Scarab are Girling two leading shoe, 14 in. by 2½ in., fully compensated; a foot pedal applies the brakes on the driving axle mechanically and brakes on the carrier axle by means of a vacuum servo on the tractor.

A hand starter is provided in addition to the electric starter with Bendix drive, and the interchangeable steering is skew-gear, with enclosed steering shaft carried in a casting secured to the front tubular cross-member. The frame has pressed-steel fabricated side-members of channel section, down-swept in the middle to give low floor height in the cab; all cross-members are tubular, except the front intermediate, which is of channel section. The cab is of steel and has a divided windscreen, in which the offside panel opens. Full doors on the near and off sides are fitted with Moyden drop lights, and a rear window is fitted. The rear of the cab, below the waistline, is made in three panels for easy maintenance and to facilitate access to the radiator.

Front suspension is by coil spring, totally enclosed and immersed in oil; the spring movement is damped hydraulically. The front wheel is carried on a 3-ton hub and the movement of the wheel is transmitted to the spring by means of a stamped steel crank.

Scammell patent coupling-gear, incorporating pressed-steel ramps and fabricated buffer and spring brackets, is fitted, and the coupling hook and guide bracket are carried on the rear tubular cross-member, to which is bolted the rear diagonal stays, making a very rigid assembly at the rear end of the frame. A release lever is fitted in the cab, in front of the driver, and incorporates a safety catch.

Included in the electrical equipment are a 12 V. constant voltage regulated dynamo and 12 V. starter, and a 75 amp. hr. battery. Principal dimensions of the models are as follow:—

	6-ton Scarab	3-ton Scarab
Overall height	6 ft. 7 in.	6 ft. 7 in.
,, length	14 ft. 3½ in.	14 ft. ¼ in.
,, width	6 ft. 3 in.	5 ft. 7 in.
Wheelbase	9 ft. 6 in.	8 ft. 10½ in.
Track	5 ft. 2 in.	4 ft. 8 in.
Minimum ground clearance	8 in	6 in. at B.A.

Open Day at Longmoor, Royal Engineers Transportation Centre

Longmoor Open Day: General Slim takes a ride on the "Old Fashioned Train" with a Chelsea Pensioner and boys from General Gordon's Boys' Home (*see also pages* 358 *and* 362)

Open Day at Longmoor, Royal Engineers Transportation Centre

(See article on page 362)

Longmoor Downs Station, Longmoor Military Railway

General Sir William Slim about to name diesel locomotive "Tobruk"

Track-laying demonstration

Breakdown crane at work

RAILWAY NEWS SECTION

PERSONAL

Lord Hawke has been elected Deputy Chairman of the Leopoldina Railway Co. Ltd. and Leopoldina Terminal Co. Ltd.

Brigadier James Storar has been elected a Director of the Bolivar Railway Co. Ltd.

The Prime Minister has nominated Sir Francis Verner Wylie for appointment as Government Director of the Suez Canal Company, in succession to Lord Hankey, who has resigned on reaching the age limit for the office, but who, it is understood, will be offered an appointment as Commercial Director, which carries no age disqualification.

Mr. A. J. Quig has been elected a Deputy Chairman of Imperial Chemical Industries Limited. The other Deputy Chairmen are Sir Frederick Bain, Sir William Coates, and Mr. J. Rogers.

Mr. A. L. Lunn retired on September 18 from the position of Electrical Engineer (Generation), London Transport.

The Ministry of Fuel & Power has announced that, subsequent to the winding-up of the Electricity Commissioners, the following appointments have been made to the Electricity Division (Engineering Department) of the Ministry (at Cromwell House, Dean Stanley Street, Millbank): Mr. A. N. East to be Chief Engineering Inspector, and Mr. H. W. Grimmitt to be Deputy Chief Engineering Inspector.

Mr. S. F. Dingle, Chief of Transportation, Canadian National Railways, has been appointed Assistant Vice-President of Operation, and Mr. R. C. Johnston, Director of Labour Relations, has been appointed Assistant Vice-President of Labour Relations. Mr. P. H. Fox, General Superintendent, Atlantic Region, succeeds Mr. Dingle as Chief of Transportation, with headquarters at Montreal.

Señor Francisco Mora has been appointed General Manager of the Buenos Ayres Southern and Buenos Ayres Western Railways, by regulation issued by the Argentine Transport Secretariat; Señores Fernando Domecq and J. R. Luis have been attached to the same railways with the rank of Sub-Manager; Mr. J. E. Sandham, hitherto General Manager, has been transferred to the Transport Secretariat in an advisory capacity. Lt.-Colonel E. H. Echezarreta has been appointed General Manager of the Entre Rios and Argentine North Eastern Railways, in accordance with a resolution by the Argentine Secretary of Transport; another resolution provides for the transfer to the Transport Secretariat in an advisory capacity of Mr. F. A. Bottomley and Mr. J. H. T. Barton, formerly General Manager and General Manager-delegate, respectively, of those railways.

Lt.-Colonel Harold Rudgard, O.B.E., M.I.Mech.E., M.I.Loco.E., M.Inst.T., who is President of the Institution of Locomotive Engineers for the session 1948-49, is Chief Officer (Motive Power) to the Railway Executive, and was previously Superintendent of Motive Power, L.M.S.R. He entered the service of the Midland Railway in 1900 as a pupil under Mr. S. W. Johnson. After going through the various workshops, he obtained six months' firing experience before entering the drawing office, and later was appointed District Locomotive Superintendent at Skipton, at Derby, and at Plaistow (London, Tilbury & Southend Section), successively. He was called up in the Territorial Army in 1914 and served for 20 months in the trenches; later he was attached to the Royal Engineers, Light Railway Section, as Superintendent of the Light Railways, 4th Army, afterwards commanding the Light Railway Workshops, Beaurianville, B.E.F., and Carriage & Wagon Depot, Audruicq, B.E.F. He retired from the Army in 1919 with the rank of Lt.-Colonel; in 1925 he was gazetted Lt.-Colonel, Land Forces, and he was called up on mobilisation in 1939, but authority was obtained for his retention in the railway service. He was gazetted Major in the Royal Engineers (Engineer & Railway Staff Corps) on February 1, 1944. During his service in France and Belgium he was wounded twice, and on two occasions was mentioned in dispatches. In 1919 he was appointed Assistant Superintendent of Freight Trains, Midland Railway, Derby, and, on the grouping, he was made Assistant to the Motive Power Superintendent, L.M.S.R., Derby. In 1932 he became Divisional Superintendent of Motive Power (Midland Division), Derby, and he was appointed Assistant Divisional Superintendent of Operation, Derby, in 1935; he became Divisional Superintendent of Operation there in 1937. Under Colonel Rudgard's leadership the Midland Division won the Express Passenger Train Competition for 1938, which carried with it the Byrom Cup; also the 1938 Divisional Freight Train Competition. He was appointed Superintendent of Motive Power in December, 1942. In our issue of August 8, 1947, we reviewed a publication, "Motive Power Organisation and Practice," which he had prepared for the L.M.S.R. Elsewhere in this issue is given a report of Colonel Rudgard's presidential address to the Institution of Locomotive Engineers on "The User of Locomotives for Revenue Earning."

Lt.-Colonel Harold Rudgard

President, Institution of Locomotive Engineers, for 1948-49

We regret to record the death on September 15, in his 61st year, of Mr. William Baird, Special Representative of the Chairman of the Canadian Pacific in London. In the capacity of Special Representative, which he had been since 1942, he was in charge of the reconstruction programme of the company's ocean fleet. Previously, during the early part of the war, he had been lent by the Canadian Pacific to serve the Ministry of War Transport as Director for the Canadian Secretariat. Mr. Baird was born in Glasgow, and in 1905 joined the Allan Line, later absorbed by the Canadian Pacific, as a junior clerk; in 1913 he was promoted Passenger Agent there; and he was transferred three years later in the same capacity to Liverpool. He moved to London in 1921 on appointment as Assistant European Passenger Manager, and went to the company's headquarters at Montreal in 1928 as Steamship Passenger Traffic Manager. Mr. Baird had been President of the Canadian Railway Club.

Mr. W. Jeffers, at present Assistant to the Chief Docks Manager in South Wales, has been appointed Dock Manager, Swansea, Docks & Inland Waterways Executive.

Mr. C. F. Beck has been appointed Assistant to Chief Commercial Manager (Goods), London Midland Region, British Railways.

We regret to record the death, at the age of 67, of Mr. H. E. Gunner, who retired in 1942 from the position of Secretary to the Railway Clearing House in Buenos Aires. He was born in London, and served for a period in the Railway Clearing House there. He left the Merchandise Department of the R.C.H. in 1906 to join the staff of the Argentine Clearing House, of which he became Secretary in 1934.

Lt.-General Sir Clarence Bird, K.C.I.E., C.B., D.S.O., who has been appointed Chairman of the statutory board of the Rhodesia Railways (now established in Bulawayo in replacement of the London board), passed into the Royal Military Academy, Woolwich, from Cheltenham College, in 1902. He received his commission in the Royal Engineers in 1904, and was posted to India in 1907. During the 1914-18 war he saw service on the Western Front; he was several times mentioned in despatches, and was awarded the D.S.O. in 1917. After the war he graduated at the Staff College and passed the Army course at the London School of Economics. From 1926 to 1930 he was Chief Instructor in Field Engineering at the School of Military Engineering, and from 1935 to 1939 he held the post of Chief Engineer, Aldershot Command. In August, 1939, he returned to India, to become Engineer-in-Chief at General Headquarters, New Delhi, which appointment he held until 1942, when he became Master-General of Ordnance, responsible for the equipment of the forces located in and based on India. On his retirement in 1944 Sir Clarence Bird, at the request of the Viceroy, became North Western Regional Food Commissioner, and at the end of 1945 was made Special Commissioner in charge of an organisation under the Department of Food, Government of India, to implement the recommendations of the Bengal Famine Inquiry Commission. After his return to the United Kingdom in 1947, he became Divisional Food Officer, Ministry of Food, in charge of the North Midland Division, until his departure for Southern Rhodesia. He was made a C.B. in 1940, and a K.C.I.E. in 1942.

Lt.-General Sir Clarence Bird

Appointed Chairman of the statutory board of the Rhodesia Railways

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Mr. T. E. Jackson, who has been appointed Assistant (Claims) to Chief Commercial Manager, London Midland Region, British Railways, joined the Midland Railway in the Chief Goods Manager's Office in 1915. He went to Euston in 1925 in the Chief Goods Manager's Department, L.M.S.R., and served for ten years in the Accommodation, New Works & Tenancy Section; he was appointed Deputy Head of Section in 1931. Mr. Jackson was promoted to the Goods Revenue Expansion Section in 1934. He became Relief Goods Agent, London District, in 1936, and after a period as Chief Clerk, Curzon Street, Birmingham, was appointed Goods Agent, Rochdale, in August, 1937. He attended the opening course at the L.M.S.R. School of Transport in 1938; and his subsequent appointments have been Goods Agent, Oldham Road, Manchester (March, 1942); Operating Assistant to District Goods Manager, Manchester (July, 1943); Assistant District Goods Manager, Bolton (March, 1944); and Assistant District Goods Manager, Manchester (June, 1947).

Mr. E. Crossley, M.B.E., M.I.Loco.E., District Locomotive Superintendent, Edge Hill, London Midland Region, British Railways, who, as recorded in our September 3 issue, has retired, was born at Southport, and received his technical education at the Bootle Technical School and the R.M.I., Horwich, where he gained several awards presented by Sir John Aspinall. Mr. Crossley joined the Lancashire & Yorkshire Railway in 1900 at Sandhills (now Bank Hall). From 1901-07 he served an apprenticeship at the same depot, and in the latter year transferred to Horwich Works, where he became Leading Fitter in 1908. He then moved to Mirfield Motive Power Depot, and remained there as Foreman Fitter until 1910, when he applied for leave to go abroad to gain experience. After serving for a period with the Pennsylvania, Lackawanna and Baltimore & Ohio Railroads in the U.S.A., he returned to the L.Y.R., at Bank Hall, in 1912. He was appointed Locomotive Foreman, Bank Hall, in 1920; and he became District Locomotive Superintendent, Abergavenny, L.M.S.R., in 1929, afterwards holding corresponding appointments at Bletchley and at Rugby. Mr. Crossley became District Locomotive Superintendent, Edge Hill, in 1935. He has been a Vice-President of the Railway Servants Orphanage since 1932. Mr. Crossley was made an M.B.E. in 1947.

Mr. J. Sinclair, O.B.E., who was recently appointed Assistant Works Superintendent, Horwich Locomotive Works, London Midland Region, British Railways, received his technical education at the Royal Technical College, Glasgow, and in 1925 commenced his apprenticeship at St. Rollox Works, L.M.S.R. He entered the drawing office in 1929, and in 1937 was appointed Second Assistant to Works Superintendent (Locomotives), St. Rollox. During the recent war Mr. Sinclair, who had been commissioned in the R.E. (S.R.) in 1935, saw service with his pre-war unit with the B.E.F. in France. He was transferred to the Transportation Branch, R.E., in 1942, and commanded, with the rank of Major, a railway workshop company, seeing service with that unit in North Africa, Sicily, and Italy. In 1944 he was appointed A.D.Tn. (Mech.), with the rank of Lt.-Colonel, and was concerned with the operation and rehabilitation of the railways on the British Army lines of communication in Italy and later in the British Zone, Austria. He was demobilised in 1945, retaining the rank of Lt.-Colonel. He was mentioned in

Mr. T. E. Jackson

Appointed Assistant (Claims) to Chief Commercial Manager, L.M. Region, British Railways

Mr. E. Crossley

District Locomotive Superintendent, Edge Hill, L.M.S.R., and L.M. Region, British Railways, 1935-48

Mr. J. Sinclair

Appointed Assistant Locomotive Works Superintendent, Horwich, L.M. Region, British Railways

despatches three times, was made an M.B.E. in 1944, and an O.B.E. in 1945. Mr. Sinclair returned to St. Rollox in 1945, and in 1946 was appointed Assistant to Works Superintendent (Production Planning) at Horwich Works, L.M.S.R.

Mr. F. C. Garside has been appointed Commissioner for Railways, New South Wales, on the retirement, on September 30, of Mr. T. J. Hartigan. Mr. R. Winsor, hitherto Chief Staff Superintendent, will succeed Mr. Garside as Assistant Commissioner for Railways.

Mr. Henry V. Bootes has been appointed Assistant Vice-President of the American Car & Foundry Company.

Mr. F. Mills, Chief Mechanical Engineer, Western Australian Government Railways, is shortly arriving in Great Britain.

Mr. R. Burgoyne, Regional Staff Officer, Western Region, British Railways (Chairman of the Central Ambulance Committee and the Divisional Ambulance Secretaries' Conference), and Mr. H. Bolton, District Goods Manager, Bristol, have been admitted to the Order of St. John of Jerusalem in the grade of Serving Brother.

We regret to record that Mr. E. S. Bradley, M.B.E., A.M.I.C.E., District Engineer, Newcastle, North Eastern Region, British Railways, collapsed and died in the Station Hotel, York, on September 16. He was 61 years of age. A portrait and biography of Mr. Bradley appeared in our issue of April 30 last.

We regret to record the death on September 4, at the age of 67, of Mr. W. G. Newberry, M.I.E.E., a senior member of the staff of the British Electrical & Allied Manufacturers' Association. He joined the staff of the B.E.A.M.A. in 1927 as Secretary to the Transformer Section. Shortly afterwards he was appointed to the commercial side as the responsible officer for switchgear and for commercial instruments, a position he occupied up to the time of his death.

Mr. C. W. Stokes, who recently retired from the post of Assistant Stores Superintendent (Purchasing), Eastern & North Eastern Regions, British Railways, commenced his railway career in 1899 as a junior clerk in the Stores Department of the Hull & Barnsley Railway. In 1914 he was transferred to the Accountant's Department, and placed in charge of stores accounting; he was subsequently appointed to the Book-Keeping Section. In 1922, after the Hull & Barnsley had been absorbed by the North Eastern Railway, he was attached to the Chief Goods Manager's staff. A year later Mr. Stokes was transferred to the Accounts Office at Newcastle. In 1926 he was appointed Chief Assistant to the Special Auditor, Chief Accountant's Department, and eight years later was appointed Special Auditor, a post he held until 1942, when he was attached to the Chief General Manager's Office in connection with the re-organisation of stores work in association with the Assistant General Manager (Works). On completion of that task in 1944 he was appointed Assistant (Stores) to the Chief Accountant. Mr. Stokes was appointed Assistant Purchasing Agent in April, 1946, and on January 1, 1948, was promoted to the appointment he held on retirement. During the 1914-18 war he served in the East Yorkshire Volunteers and the Artists Rifles.

Ulster Transport Authority

The Northern Ireland Ministry of Commerce has made an Order fixing October 1 as the appointed day for the vesting in the new Transport Authority of the undertakings of the Northern Ireland Road Transport Board and of the Belfast & County Down Railway.

The Transport Authority has made the following appointments:—

Mr. J. A. Clarke to be Chief Comptroller; in addition to being the chief financial officer, he will be responsible for the legal and secretarial departments, for the purchase and custody of stores for hotels and for general staff matters. He is at present Chief Executive (Finance) & Secretary of the N.I.R.T.B.

Mr. J. Courtney, Chief Executive (Engineering) of the N.I.R.T.B., becomes Chief Engineer of the Authority, and will be responsible for the maintenance of all rolling stock, buildings, permanent way and works.

Mr. J. W. Hutton, Manager of the Northern Counties Committee, will become Chief Traffic Manager of the Authority, and will be responsible for rail and road operations and for all commercial matters connected with the transport side of the undertaking.

Mr. A. Morrison to be Chief Officer (Special Duties), responsible for proceedings before the Transport Tribunal in connection with facilities, rates and fares, and such other specialised functions as may be allocated to him. He is at present one of the three Chief Executives of the N.I.R.T.B.

Mr. T. B. Andison, Secretary & Accountant, Belfast & County Down Railway, to be Secretary & Registrar of the Authority.

Mr. J. G. T. Anderson to be Deputy Secretary & Registrar.

Mr. D. Wilson Smyth has been elected Vice-Chairman of the Authority.

The headquarters of the Authority will be located in the meantime at 10, Royal Avenue, Belfast.

We regret to record the death on September 16, after a short illness, of Mr. E. A. Bilham, M.C., B.Sc., A.M.I.C.E., District Engineer, Guide Bridge, Eastern Region, British Railways. A biography of Mr. Bilham appeared in our issue of January 16 last.

Longmoor "Open Day"

At the "open day" at the R.E. Transportation Training Centre, Longmoor, on September 15, in addition to General Slim, the Railway Executive was represented by Mr. V. M. Barrington-Ward, and the Ministry of Transport by Brigadier C. A. Langley, an Inspecting Officer of Railways. A number of former members of the Supplementary Reserve were also present, including Mr. R. H. Edwards, Divisional Docks Engineer, and Mr. E. C. Cookson, Divisional Engineer, Newport, Western Region.

We regret to record the death on September 14 of Mr. Frank A. Angell, Assistant to the Locomotive Works Manager, Doncaster, Eastern Region, British Railways. He served at Doncaster Locomotive Works as a pupil under Sir Nigel Gresley, and was then for a number of years an Inspector of Materials at Doncaster. Mr. Angell was appointed in 1937 Assistant to the Works Manager, Carriage Works, York. He joined a railway workshops company, R.E., in which he held the rank of Major, and on release from military service in 1945 resumed railway service at York Carriage & Wagon Works. In the next year he was appointed Works Assistant, Doncaster Locomotive Works, and, in 1947, Assistant to the Works Manager, Doncaster Locomotive Works.

Colonial Railway Appointments

The Secretary of State for the Colonies recently approved the following appointments:—

Mr. T. H. Baggaley, Locomotive Superintendent, Palestine Railways, to be Superintendent of the Railway, Cyprus.

Mr. J. Hudson, District Locomotive Superintendent, Kenya & Uganda Railways & Harbours, to be Works Superintendent, Kenya & Uganda Railways & Harbours.

Mr. J. M. Fogarty, Assistant Engineer, Palestine Railways, to be Assistant Engineer, East African Railways & Harbours.

Mr. R. M. Davies, Assistant Locomotive Superintendent, Palestine Railways, to be Assistant Locomotive Superintendent, East African Railways & Harbours.

Mr. S. P. Smith, Senior Assistant Engineer, Nigerian Railway, to be District Engineer, Nigerian Railway.

Mr. J. W. Chaloner to be Assistant Engineer, Nigerian Railway.

Mr. G. W. Launder to be Assistant Engineer, Nigerian Railway.

Mr. J. A. R. Closel to be Works Manager, Mauritius Government Railways.

Institute of Transport Awards

The Council of the Institute of Transport has authorised the following awards in respect of papers submitted during the session 1947-48 and in respect of the 1948 examinations:—

British Transport Commission Awards: (i) £40 to Mr. Adin Hull, M.B.E., A.M.Inst.T., Stores Superintendent, Buenos Ayres & Pacific Railway; (ii) £40 to Mr. C. F. Klapper, A.M.Inst.T., Assistant Editor, *Modern Transport*; (iii) £10 to Mr. H. G. M. Viney (Graduate), London Transport; (iv) £10 to Mr. J. Coward (Student), British Railways (N.E. Region).

Road Transport (Passenger) Medal: Medal and a monetary award to Mr. J. E. Cowderoy, M.B.E., M.Inst.T., Development Officer, Commercial Manager's Department, London Transport.

Bristol and White-Smith Air Transport Awards: (i) Medal to Mr. J. F. Parke (Student), *Modern Transport*; (ii) £10 to Mr. J. W. Swann (Graduate), Divisional Traffic Superintendent, Scottish Section, Renfrew, British European Airways.

Sir Alfred Read Award: Medal and £25 to Mr. A. Watson, M.B.E., A.M.Inst.T., Chamber of Shipping, London.

The Institute 1944 Award: £15 to Mr. R. E. G. Brown, A.M.Inst.T., London Area Secretary, Traders' Road Transport Association.

The Graduate Award: £15 to Mr. D. G. I. MacDonald (Graduate), I.C.I. Metals Limited.

The Student Award: £10 to Mr. F. Campbell (Student), Coventry Corporation Transport.

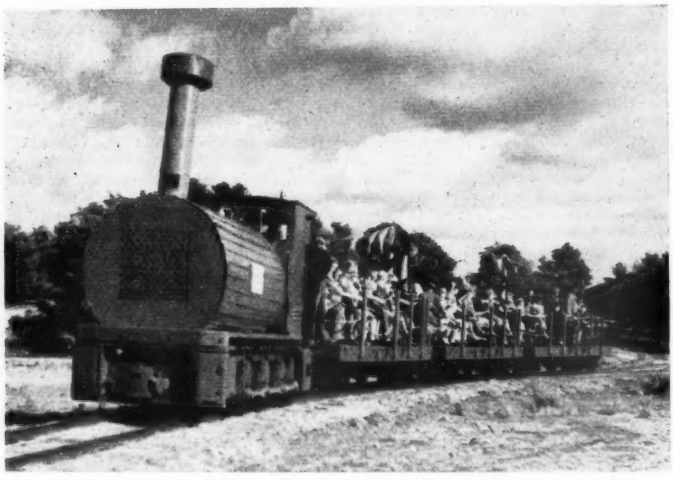
The "Modern Transport" Award: £5 to Mr. T. H. Smart (Graduate), Plymouth City Transport.

Associate Membership Examination Prizes: (i) £25 for first place to Mr. A. McFarlin (Graduate), Liverpool Corporation Transport; (ii) £15 for second place to Mr. E. H. Whittaker (Graduate), Rawtenstall Corporation Transport.

Graduateship Examination Prizes: (i) £20 for first place to Mr. A. Campbell (Student), Glasgow Corporation Transport; (ii) £10 for second place to Mr. O. C. Cochrane (Student), British Overseas Airways.

Royal Engineers Transportation Centre "At Home"

At the Longmoor public day this year, special emphasis has been placed on the R.E. (Transportation) Supplementary Reserve



A full load in the "Old-Fashioned Train"

The second annual public day at the Longmoor Transportation Centre of the Royal Engineers, was held on September 15, when members of the public were enabled to visit the centre between 1.30 and 7 p.m. A series of demonstrations commenced at 1.45 p.m., with a demonstration of ramp wagon loading and proceeded until Retreat at 6.45 p.m. Three track laying, railway breakdown crane, and ramp wagon demonstrations were given during this time, and there were five diving displays and a number of drill displays. During the proceedings, music was provided by the band of the Corps of Royal Engineers, Director of Music, Captain A. Young.

At a charge of 6d. each, a number of special attractions was available to the public, and included footplate rides by engines leaving Longmoor Downs Station every 20 min., conducted tours of the signal school arranged every half hour, and trips on an "old-fashioned" railway. Proceeds from those events, for which a small charge was made, will be given to the Royal Engineers benevolent fund.

A highlight of the proceedings came at 3 p.m., when General Sir William Slim, Deputy Chairman of the Railway Executive and Honorary Colonel R.E. (Transportation) Supplementary Reserve, formally named a diesel-electric locomotive *Tobruk*. This locomotive, specially decorated for the occasion, was the last of the American-built diesel-electrics to work on the Western Desert Railway before its closure.

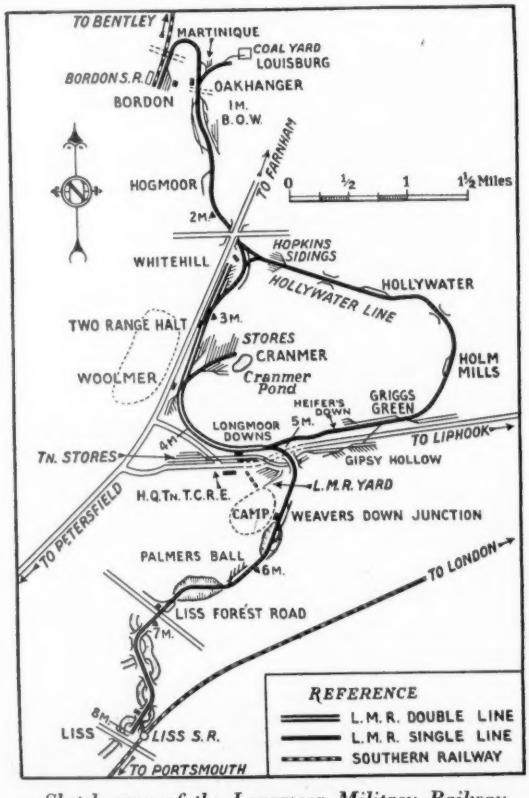
Brigadier R. Gardiner, Director of Transportation and Commandant of the Transportation Centre, said at the press conference, that as Longmoor has been the home of railway troops since 1903, the Centre could not claim to be anything new. However, with the ever increasing importance in war of adequate transportation, the Centre had grown into two separate wings, Longmoor for the railway work, and Southampton Water for the port side of transportation. Transportation, in Army language, covered the planning, construction, repair, maintenance and operation of the ports, railways and inland waterways needed by the forces. The programme for the public day attempted to demonstrate as many as possible of these varied activities.

Special mention was made of the Supplementary Reserve, and Brigadier Gardiner recalled that last year he had referred briefly to the fact that a start was being made to resuscitate the R.E. (Transportation) Units of the Supplementary Reserve. Recruitment had commenced on June 15 of this year, and at the time of the public day, there were officers and men of the Reserve doing their annual training at the Centre.

Commenting on the main features of the Supplementary Reserve, Brigadier Gardiner said that in peace, transportation needs of the Army were met by the civil organisations and the Transportation Units of the Regular Army were only a nucleus. During wartime, expansion of the Transportation Service took the form of units of the Supplementary Reserve, and for these port and railway units, the Army had to be able to draw on trained men from the civil transport organisations.

As, however, each unit may be recruited from the length and breadth of a railway region, or from a group of ports, there was no question of having local drill halls and weekly parades. Instead, there was a fixed annual training period of 15 days carried out at Longmoor, which formed the headquarters of the whole Supplementary Reserve. Railway units came to Longmoor and port units to Marchwood, and all authorities concerned had agreed to grant extra annual leave to cover the camp period.

Obligations of the supplementary reservist in the event of war would be identical with those of the Territorial Army, and consequently, the annual bounty would be the same. The national service man, after completing his 12 months period with the active army, could carry out his 6 years compulsory reserve service in the Supplementary Reserve, instead of the T.A. At present, however, as in the case of the T.A., it was of the greatest importance that the Supplementary Reserve Units recruit sufficient experienced men, preferably those with some war service, so that they would be ready to start receiving national service men in 1950.



Sketch map of the Longmoor Military Railway

Railway Students' Association Convention

A survey of activities at the eleventh convention, which recently was held at Sheffield

The eleventh convention of the Railway Students' Association, London School of Economics & Political Science, was held at Crewe Hall, Sheffield, from September 17 to 21. The main party of members arrived at Sheffield by the 8.55 a.m. train from St. Pancras, and after lunch at Crewe Hall, proceeded to the Town Hall for a formal reception by the Lord Mayor, Alderman W. E. Yorke, and the Lady Mayoress, of the City of Sheffield.

The Lord Mayor, in a speech of introduction, said that he welcomed members first and foremost as students, and, later, stressed the importance to the nationalised railways of the clerical grades, an importance that was sometimes overlooked. Mr. C. E. R. Sherrington, Secretary, Railway Research Service, who thanked the Lord Mayor for his warm welcome, pointed out that being students kept many people young, and he counted it a great privilege to come to Sheffield, which was largely a railway-made city. After tea, members were conducted over the Town Hall, and were given a brief introduction to the history and present position of Sheffield in the national economy.

Opportunity was afforded the Association to make an earlier visit than had been planned to the London Midland Region Wicker branch, so that the handling of a special load could be studied. Consequently, members left Crewe Hall at 9.45 p.m. for the Vickers Works of the English Steel Corporation, where cogging was in process on an ingot weighing some 125 tons. Here the preliminary shape of a gear wheel rim for marine-engine use was being fashioned, and was subsequently transferred by gantry crane to a rail bolster wagon. The transport of this red-hot ingot involves a short bank up to the old Midland main line between Sheffield and Leeds, and special working across these tracks to the Grimesthorpe Works for a further process. Members were enabled to see the complete operation and were conducted throughout by: Mr. E. A. Harrison, Goods Agent, Wicker; Mr. Jones, Yard Master, Grimethorpe; Mr. Tomlinson, Chief Transit Clerk to the District Goods & Passenger Manager, Sheffield, L.M.R.; and Messrs. Tingle, Farmer, and Hodgkinson of the English Steel Corporation Limited.

On Saturday, September 18, Mr. C. E. R. Sherrington, acting for the President, Sir Alexander M. Carr-Saunders, Principal of the London School of Economics, opened the convention at Crewe Hall. In introducing Mr. R. C. Moore, General Manager, Sheffield Corporation Transport, who later gave a lecture on "The Passenger Services of the Sheffield Corporation," Mr. Sherrington pointed out the interest taken by students in such services, for they were transport as well as railway students. Following Mr. Moore's lecture, there was a lively discussion, showing that students had not only an interest in road transport, but also a comprehensive knowledge of its working. Mr. L. W. Orchard, Chairman of the Association, expressed a vote of thanks to Mr. Moore.

During the course of Saturday afternoon, there was an extensive tour by bus of the Sheffield Corporation tramway and motor bus routes, culminating in a visit to the combined bus and tram depot. The greater part of the tour followed the outer circle bus route.

Expectation that the visit to Rotherham Control Room, London Midland Region, would have to be restricted to a party of 20, was allayed, and the visit was thrown open to as many members as desired to take part. Mr. W. A. G. Suddaby, Assistant District Operating Manager, Rotherham, who ably summed up the purpose and history of train control, particularly as it applies to Rotherham district, reminded members that the present control building had once been the head offices of the Sheffield & Rotherham Railway. Following the merger with the Midland Railway, the premises had fallen into disuse, and, before the recent search for a suitable building to house the Control Centre, had passed through a variety of uses. Their eventual renovation and redecoration had been a notable piece of work.

Mr. Suddaby and Mr. C. Hernsham, Assistant to the District Operating Manager, Rotherham, then conducted the party over the control room and described the functions of the train, traffic, relief, passenger, and head controllers.

The exertions of the first two days of the Convention were followed on Sunday, September 19, by an afternoon motor coach tour of North Derbyshire, when members were able to enjoy the scenic splendours of the Derbyshire Peak District and the Derwent Valley.

Proceedings were opened at Crewe Hall on Monday, by Mr. C. E. R. Sherrington, who introduced Mr. W. B. Carter, District Goods & Passenger Manager, Sheffield, London Midland Region. Mr. Carter's paper, entitled "Selection of Staff," proved not only comprehensive but highly provocative, and members responded in a bright and well-informed discussion. Mr. Medland concluded by expressing a vote of thanks to the speaker.

Transport on Monday afternoon was provided by special bus to the Eastern Region locomotive depot at Darnall. The depot, which lies on the old Great Central main line to Marylebone, is situated just to the south of Sheffield, and was described and illustrated in our issue of October 1, 1943. Under the guidance of Mr. H. Bell, Assistant District Locomotive Superintendent, Gorton, Mr. J. Winter, Shed Master, Darnall, and Mr. J. Mitchinson, Mechanical Foreman, Darnall, three parties visited the running shed and repair shops and were able to inspect a number of installations. Operations were seen in progress at the wet ash-pit, mechanical coaling plant, fluorescent-lighted inspection shed, and the Kelbus sand-drying furnace.

Members were escorted over the cutlery works of Walker & Hall, Limited, by Mr. E. A. Nicholson and Mr. W. S. Longden, Joint Managing Director, Walker & Hall, Limited, on September 21. A variety of processes in the manufacture of cutlery and silverware was inspected during the morning, and members returned to the works after lunch to complete their visit, before the main party returned to London by the 5.10 p.m. train from Sheffield, Victoria.

We hope to make further reference to the papers read at the convention in a forthcoming issue.

SELF-CLEANING PAINT.—Technicians at the British Railways, London Midland Region, Derby paint laboratory have produced a self-cleaning white paint, which is now being used on signal posts. The paint laboratory at Derby, which began in 1912, employs 24 scientists and paint technicians, and among their instruments is one for making weather. Another outstanding achievement of the laboratory was the reduction of the number of coats of paint for carriages, while at the same time giving twice the life and reducing the painting operation from 21 days to 2.

GOODS VEHICLES' OPERATING CENTRES.—On and after October 1 next, the holder of an "A" or "B" licence may apply to the appropriate Licensing Authority for Goods Vehicles to have the operating centre of a vehicle changed either temporarily or permanently. This is provided for in the Goods Vehicles (Change of Operating Centre) Regulations, 1948, made by the Minister of Transport under sub-section (6) of section 58 of the Transport Act, 1947. The Regulations also prescribe the procedure to be followed by the applicant and the Licensing Authority, and the forms on which the application and any objections to the application by another provider of comparable transport facilities may be made. Copies of the Regulations may be obtained from H.M. Stationery Office, price 1d. each.

ADHESIVE NOTES FOR PLASTIC CONSTRUCTION.—A new technical publication, "Formica Working Notes—Adhesives," has been issued by the design section of De La Rue Insulation Limited for architects, coach & carriage builders, and furniture manufacturers. The book gives details of certain cements, and thermo-setting and thermo-plastic resin adhesives suitable for bonding Formica plastic to other surfaces.

INTERNATIONAL WAGON UNION CONFERENCE.—To discuss various problems concerning the international exchange of goods wagons a conference arranged by the International Wagon Union was held at Prague between September 8 and 11. The meeting, presided over by M. E. Ballinari, Chief Operating Superintendent, Swiss Federal Railways, was successful in inducing the railway administration of the Soviet zone in Germany to participate in the convention. British Railways, which sent delegates, and the railway administration of the Saar, now are members of the Union. The International Wagon Union was set up in 1921, since when its Secretariat has been held by the Swiss Federal Railways. The first post-war conference of the Union was held at Lucerne in July, 1946.

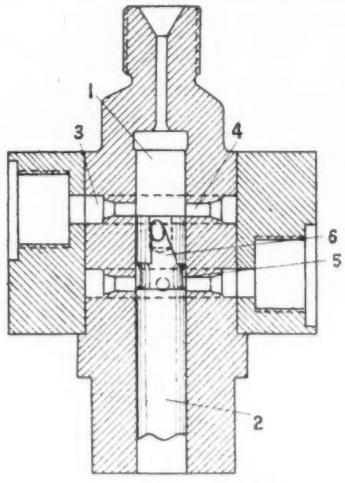
EXTRA TRAINS FOR AYR RACES.—In connection with Ayr Races on Wednesday, Thursday and Friday, September 15-17, additional trains were provided each day for Newton-on-Ayr and Ayr from Glasgow (St. Enoch) at 11.40 a.m., 12 noon and 12.10 p.m.; from Paisley (Gilmour Street) at 12.16 and 12.25 p.m., and from Johnstone at 12.3 p.m. Return trains left Ayr at 5.15, 5.26 and 5.38 p.m and Newton-on-Ayr at 5.22, 5.33 and 5.43 p.m.

ABSTRACTS OF RECENT PATENTS*

No. 576,413. Fuel-Injection Pumps

V. H. Danvogg, of Mellemleddet 16, Copenhagen, Denmark, and V. Duer, of Peter Bangsvej 77, Copenhagen, Denmark. (*Convention date: April 26, 1940.*)

In order to ensure rapid filling of the pumping cylinder 1, the upper edge of the plunger 2 uncovers the return ports 3, 4 at



R.G. 576,413/40

the same time as the annular recess 5 uncovers the inlet ports. In each case several ports are spaced radially around the pumping cylinder, so as to give easy flow, and fuel is drawn in from the return pipe as well as the normal feed pipe. On the pressure stroke the fuel is compressed in the cavity 1 until the return ports 3, 4 are uncovered by the sloping side of the recess 6 in the plunger. Control is obtained by rotating the plunger in the normal manner.

No. 575,971. Automatic Brake Adjustment

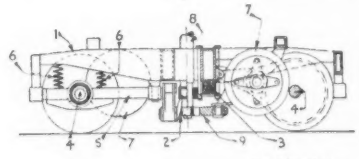
H. Gallusser, of 47, Chemin de Moillebeau, Geneva, Switzerland. (*Convention date: July 7, 1943.*)

In a device for automatic adjustment of brake rods, the lever 8 pulls a member 7 with a conical seating 4 on to a split nut 5, held together by a spring ring 6, and so draws the threaded rod 1 to the right to apply the brake. If too much slack exists, the sleeve 2 strikes a stop 9 before the brake block 12 reaches the wheel and, while the lever 8 continues to be moved by the brake cylinder, the second split nut 11 is freed from the conical seating 3 and repeatedly jumps threads until the brakes are applied. On the return stroke of the lever 8, the nut 5 is similarly freed from its seating 4 and jumps a corresponding number of threads to the left, the spring 10 causing this. On subsequent applications of the brakes the sleeve 2 does not reach the stop 9 because the length of the linkage is now shortened by the number of threads jumped by the nut.

No. 578,381. Electric Bogies

A.G. Brown Boveri et Cie., of Baden, Switzerland. (*Convention date: December 19, 1942.*)

A driving bogie designed to provide smooth running without the transmission of swinging movements to the coach body comprises a frame 1 on which the body is carried on sliding supports pressing on a bolster beam 2, this being supported on



R.G 578,381/43

two transverse bogie springs 3 fixed to the bogie frame. Bearings for the driving axles 4 are carried on swing levers 5 and coil springs 6 are set between these and the bogie frame. A separate motor 7 drives each axle through a reduction gear, and tractive effort is communicated to the bottom of the pillar 8 through a drawbar 9.

No. 577,060. Radiators

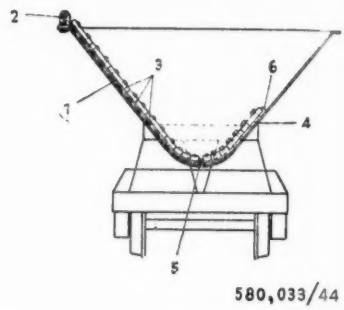
Serck Radiators Limited and F. C. C. Hems, both of Warwick Road, Greet, Birmingham, 11. (*Application date: July 28, 1944.*)

In order to prevent fracturing of the joints between the vertical water pipes and the plates of the header and bottom tanks when twisting of the structure occurs, angular reinforcing members extending the width of the tanks are brazed to the inside faces of the plates adjacent to the protruding edges of the tubes. This strengthens the tube plate and also enables a more effective soldered joint to be made between the tubes and the plate.

No. 580,033. Tipping Wagons

F. W. Rowbotham, of Park House, Stonehouse, Glos. (*Application date: November 18, 1944.*)

In order to prevent the adhesion of wet or sticky materials to the sides of a wagon when it is tipped, an apron or flap is fitted inside the body. This consists of three metal straps 1 shaped to conform to the body, pivoted at the upper edge 2 of the body and carrying boards 3 which



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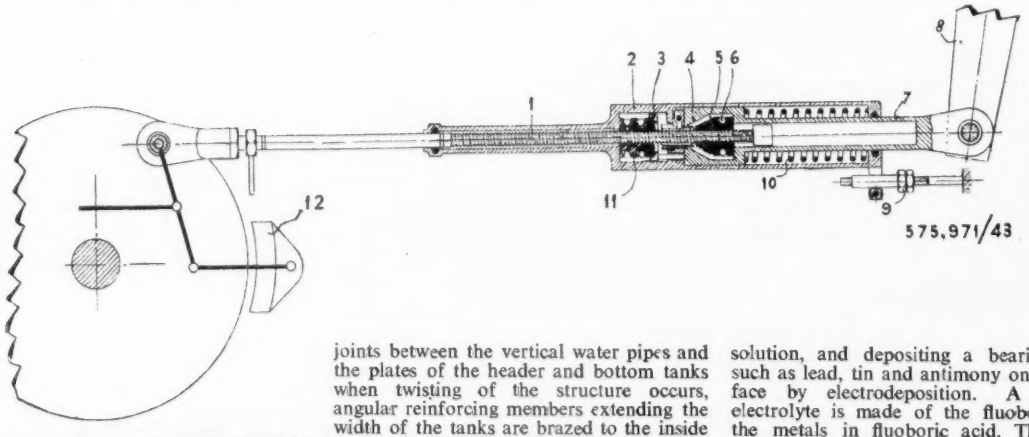
completely cover that side of the body. An extension of this flap on metal straps 4 continues partly up the opposite side and is hinged to the first part at a pivot 5. For unloading, the body is tipped towards the right and, as the load is discharged, the edge 6 of the flap scrapes along the right-hand side of the body until the entire flap swings outwards about the pivot 2, so throwing the material clear of the body.

Nos. 577,335 and 577,463. Bearing Surfaces

577,335—*Vandervell Products Limited, of Western Avenue, London, W.3. Communicated by The Cleveland Graphite Bronze Company, of 880, East 72nd Street, Cleveland, U.S.A.* (*Application date: February 10 1944.*)

577,463—*Vandervell Products Limited, of Western Avenue, London, W.3, and D. F. Green, of 4, Greystoke Lodge, Hanger Lane, London, W.5.* (*Application date: June 21, 1943.*)

The former specification describes bearings such as are used for crankshafts, made by forming an intermediate layer of copper, silver or bronze on a steel backing shell, treating this layer with etching solution, and depositing a bearing alloy such as lead, tin and antimony on the surface by electrodeposition. A suitable electrolyte is made of the fluoborates of the metals in fluoboric acid. The latter specification describes a bearing having a copper cadmium alloy electrolytically deposited on a backing strip, the cadmium forming approximately 5 per cent. of the alloy.



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* These abridgments of recently published specifications are specially compiled for *The Railway Gazette*, by permission of the Controller of His Majesty's Stationery Office. Full specifications can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, price 1s. each

Parliamentary Notes

Road Safety

Lt.-Colonel R. Hamilton (Sudbury—Lab.) on the motion for the adjournment of the House of Commons on September 15 raised the question of road safety. He said that during the past 22 years about 144,800 persons had been killed on our roads, a large proportion of them children. An important question was that of limiting speed; but speed was not the only consideration. They also wanted to make motorists more responsibly minded. There was no doubt there would be opposition on the part of the motoring world to any attempts to restrict their freedom to enjoy speed or anything else as much as they liked. They were very powerful. Motorists as a whole were all out for road safety, all out to save life, with one great reservation, that there must be no interference with their own enjoyment.

Mr. T. C. Skeffington-Lodge (Bedford—Lab.) said that, first, the road system should be improved; secondly, under discipline they could look for a better spirit of good neighbourliness among our people to enforce the rules and regulations laid down for all road users; thirdly, there should be increased education.

Mr. James Callaghan (Parliamentary Secretary, Ministry of Transport) pointed out that the speed limit was not a licence to drive at 30 miles an hour on all occasions, irrespective of the circumstances and the traffic. It was a maximum speed at which a vehicle might be driven.

There were other factors than that of speed in accidents. The condition of a vehicle and the carelessness and selfishness of those who used the roads were frequently the causes of accidents. Another cause was the construction of the roads themselves, which had been far overtaken, he regretted to say, by the development of the internal combustion engine.

As to the future, he would like to focus attention throughout the country at one period in time on particular aspects of road safety, so that they could have a national campaign over a period of a week or two weeks. If they took a particular case in that way and really hammered it home, they perhaps stood more chance of making an impression on public opinion than by defusing their propaganda over the whole range and field of road safety. At the moment he was engaged, in a preliminary way, in working out plans for picking out some really vital aspect on which to concentrate all their efforts nationally and locally during a particular week or so.

Questions in Parliament

Petrol Allocation

Mr. Philips Price (Forest of Dean—Lab.) on September 13 asked the Minister of Transport (1) whether he was aware that despite the terms of his announcement on April 8 indicating that there would be a reduction of 10 per cent. in the petrol allocations for commercial vehicles, cuts considerably in excess of that percentage were being made; and what particular instructions had been given by him to regional petroleum officers; and (2) whether he was aware that reductions of more than 10 per cent. were being made in petrol allocations for commercial vehicles without the requirements of any particular operator concerned being considered; that as a result operators were put to considerable unnecessary work in contesting the reduction; and if he would now give instructions for that practice to cease.

Mr. Alfred Barnes (Minister of Transport), in a written answer, stated: Although the 10 per cent. cut in petrol allocations applied to goods vehicles generally, it did not affect the existing discretion of a regional transport commissioner to make a greater or lesser reduction in any case where he considered that necessary. I am not aware of any unnecessary work being caused by commissioners in the exercise of their discretion in this matter.

EMPLOYERS APPROVE WAGE INCREASE.—The Engineering & Allied Employers' Federation announced on September 21 that it is prepared to accept in principle the recommendations of the court of inquiry into the engineers' wage claim. These recommendations include an all-round increase of 5s. a week, a levelling up of district basic rates to 66s. a week for skilled men and 51s. for unskilled, and the re-opening of negotiations for a simplified wage structure in the industry.

Notes and News

Senior Traction Sales Engineer Required.—Applications are invited for the position of senior traction sales engineer at the head office of the General Electric Co. Ltd. Diesel-electric traction experience essential. See Official Notices on page 367.

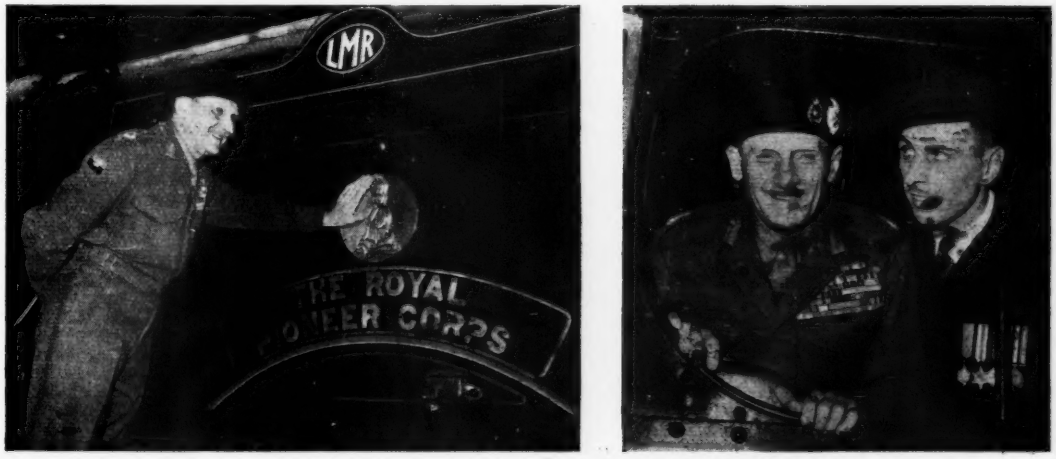
Argentine North Eastern Railway Liquidation Distribution.—The Argentine North Eastern Railway has announced that a first liquidation distribution to holders of ordinary stock will take place on October 15 next. The first payment will be at the rate of £12 10s. per £100 of stock.

District Traffic Manager Required.—A district traffic manager, not over 35 years of age, is required by the Sudan Railways for service in the Sudan. Applicants should have had traffic experience on a British railway, preferably as a special trainee, or served in the traffic department of a railway overseas. See Official Notices on page 367.

Havana Electric Railway Property Award.—The Cuban State has been awarded the property in Havana of the Havana Electric Railway Company. The award was made in a judicial public auction in foreclosure of proceedings established by the Central Hanover Bank & Trust Company of New York as trustees of the company's bond issue in default.

L.M.R. Locomotive Named "The Royal Pioneer Corps."—Field Marshal Viscount Montgomery formally named the "Patriot" class locomotive No. 45506 *The Royal Pioneer Corps* at a ceremony at Euston Station on September 15. Mr. G. L. Darbyshire, Chief Regional Officer, London Midland Region, presided, and the guests included Sir William Wood, British Transport Commission, Major-General A. L. I. Friend, Colonel Commandant, Royal Pioneer Corps, and Brigadier J. H. M. Hyde, Director of Labour, War Office. Several disabled ex-Pioneers were present. The locomotive, which was built at Crewe in 1932, carries the crest of the Corps on plaques presented by the Royal Pioneer Corps Association. The driver at the ceremony, Edward Tassiker, served in

Engine-Naming Ceremony at Euston Station



Field-Marshal Viscount Montgomery named L.M.R. locomotive No. 45506 "*The Royal Pioneer Corps*" *at Euston Station on September* 15 (*see paragraph above*)

the Royal Pioneer Corps from 1939 to 1946, and the fireman, E. Hodgson, served with the Royal Engineers throughout the recent war.

Leyland Vehicles for South America.—Leyland Motors Limited has received an order worth £600,000 from Argentina. The order is for 300 vehicles of various types and is believed to be the largest single post-war order placed by South America with one British firm for heavy-duty diesel goods vehicles.

Cheap Tickets to Thame Show.—For the Thame Show on Thursday, September 16, third class cheap day tickets were issued to Thame and Haddenham from all Western Region stations and halts, within a fifty mile radius, including Paddington. Tickets were at single fare for the return journey and were available on the day of issue only, by any train in each direction.

Sunday Special Excursions.—For the first time since 1939, special excursions at considerably less than the ordinary single fare for the return journey were run, on Sunday, September 19, from London to a number of South Coast resorts, by British Railways (Southern Region). The excursions left Victoria at 11.6 a.m. for the Isle of Thanet resorts, 11.12 a.m. for Littlehampton and Bognor Regis, 11.15 a.m. for Brighton and 11.30 a.m. for Hove, Shoreham-by-Sea and Worthing. The return trains left the coastal stations at approximately 8 p.m. in each case. Bookings at corresponding cheap rates were made from many suburban stations.

New Southern Region Ship.—The *Maid of Orleans*, latest addition to the fleet of British Railways passenger vessels, was launched at Dumbarton by Lady Missenden on September 17 in the presence of Sir Eustace Missenden, O.B.E., Chairman of the Railway Executive, and M. Lemaire, Director General of the French National Railways. Built by William Denny & Bros. for the Southern Region, the *Maid of Orleans* is of 3,700 tons gross, and has a length of 341 ft., and a speed of 22 knots. She will carry at least 1,000 passengers on the short sea routes to the Continent and will have first and third class public rooms, restaurant and bars. The vessel will be the second built since the war for the Southern Region fleet to be fitted with the Denny-Brown stabiliser. She is also equipped with radar.

Railway Wage Claim Presented.—The claim of the National Union of Railwaymen for a flat-rate increase of 12s. 6d. a week, which represents the balance between the flat-rate increase of 7s. 6d. a week awarded by a court of inquiry a year ago and the £1 demanded by the railway unions, was submitted to the Railway Executive last Friday and will be dealt with at a Railway Executive meeting to be held in the near future.

Sir Cyril Hurcomb Visits London Motive Power Depot.—Sir Cyril Hurcomb, Chairman of the British Transport Commission, on September 15 visited Camden (North West London) Motive Power Depot and Chalk Farm enginemen's hostel of the London Midland Region, British Railways, and inspected the arrangements for rest and refreshment provided for engine crews working to London from as far afield as Carlisle, Manchester and Holyhead. The hostel has 90 bedrooms and is used on the average by 100 men every 24 hours; at the nearby shed are stationed 57 locomotives for the working of main-line trains out of Euston, and a staff of 469 is employed. Accompanying Sir Cyril Hurcomb were Mr. R. A. Riddles and Mr. V. M. Barrington-Ward, Members of the Railway Executive.

Institution of Railway Signal Engineers.—A series of nine lectures on signalling subjects has been organised by the Institution of Railway Signal Engineers for the 1948-49 session. The lectures will be delivered at the London Transport Executive Signal School, Earls Court Station, S.W.5, at 6.15 p.m., and at the Westinghouse Brake & Signal Co. Ltd., Chippenham, Wilts, at 7.30 p.m., on the following dates respectively:—October 15 and 20, "Layout of Signals," by Mr. W. H. Challis; November 12 and 10, "Principles of Interlocking," by Mr. W. H. Such; November 26 and December 1, "Single Line Control," by Mr. D. C. Doswell; December 17 and 22, "Electrical & Mechanical Interlocking," by Mr. W. H. Such; January 14 and 12, "Principles of Power Point Detection & Control," by Mr. H. W. Hadaway; February 4 and 2, "Signalling Relays," by Mr. J. F. Tyler; February 25 and 23, "Typical Signal Control Circuits," by Mr. J. P. Loosemore; March 18 and 16, "Typical Selection Circuits," by Mr. J. P. Loosemore; April 8 and 6, "Track Circuits," by Mr. W. H. Challis. Application to attend the lectures should be made, not later than October 8, to Mr. T. S. Lascelles, 26, Voltaire Road, Clapham, S.W.4, for Earls Court, and Mr. D. G. Shipp, Hathaways, New Road, Chippenham, Wilts., for Chippenham, accompanied in each case by a remittance of 12s. 6d.

Antofagasta (Chili) & Bolivia Railway Co. Ltd.—The report for the year ended December 31, 1947, shows gross receipts of £2,358,793, as compared with £1,786,975 in 1946. Working expenses were £2,012,040, compared with £1,510,751. Net receipts, after deduction for exchange differences, were £320,746. Passenger receipts were £159,990, an increase of £23,173. Public goods receipts were £1,989,849, an increase of £522,187. Working expenses, including salaries and wages, contributions under the social laws, and cost of fuel and materials, increased by £501,289. The ratio of expenditure to gross receipts was 85·30 per cent., against 84·54 per cent. for 1946.

San Paulo Railway Payment.—The San Paulo (Brazilian) Railway Co. Ltd. has received from the Bank of Brazil the sum of £6,638,803, which represents its recognised capital. Notice will be given shortly to the holders of the £395,381 5 per cent. redeemable debenture stock that the stock will be paid off on January 1, 1949, at 102 per cent. with the interest accrued thereon as provided by the terms of the issue. Also, notice will be given before January 1, 1949, of the repayment at par on July 1 of the £750,000 permanent 5½ per cent., the £250,000 permanent 5 per cent. and the £1,000,000 permanent 4 per cent. debenture stocks; the half-yearly interest on these debenture stocks will be paid as usual on January 1, 1949, and the final payment of interest will be made at the date fixed for redemption.

Western Region London Lecture & Debating Society.—The following meetings of the British Railways (Western Region) London Lecture & Debating Society have been arranged for the 1948-49 session:—October 7: "Problems of Nationalised Industries" (Mr. L. J. Callaghan, M.P., Parliamentary Secretary, Ministry of Transport); October 21: "The Work of a District Goods Manager" (Mr. H. Bolton); November 4: "Freight Marshalling Yard Operations" (Mr. A. I. Clifford); November 18: "Road Transport—the New Regime" (Mr. Harold Elliott, Chief Officer, Freight, Road Transport Executive); December 2: brains trust (question-master; Mr. H. G. Bowles; also Messrs. A. W. J. Dymond, S. G. Hearn, T. H. Hollingworth, C. H. T. Morgan and S. B. Taylor, Deputy Secretary, British Transport Commission); December 9: debate with Southern Region Debating Society at London Bridge; December 16: "Modern Permanent Way Maintenance" (Mr. A. N. Butland); January 6, 1949: "The Provision and Working of Coaching Stock" (Mr. C. W. Powell); January 20: "Staff Welfare on the Railways" (Mr. Charles Humphries); February 3: reading and

Lady Missenden Launches the "Maid of Orleans" at Dumbarton

Lady Missenden, Sir Maurice Denny, and Sir Eustace Missenden (Chairman of the Railway Executive) at the launching of the "Maid of Orleans" (see paragraph above)

OFFICIAL NOTICES

None of the vacancies on this page relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he, or she, is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

THE General Electric Co. Ltd. invite applications for the position of Senior Traction Sales Engineer at their Head Office in London. Diesel-electric traction experience essential. Apply giving particulars of age, education, training, experience, and salary required to: STAFF MANAGER, GENERAL ELECTRIC CO. LTD., Magnet House, Kingsway, W.C.2.

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffics, with an account of economic problems; the motive power used: and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 5 and 12, 1945. *Price* 1*s*. *Post free* 1*s*. 2*d*.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Method. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. *Price* 20*s*. *By post* 20*s*. 6*d*.

New Zealand Government Railways

APPLICATIONS are invited for Assistant Engineers for Signalling work in the Signal and Electrical Branch of the New Zealand Government Railways. Applicants must be (*a*) Corporate Members of the Institution of Electrical Engineers, or (*b*) Graduates of the Institution of Electrical Engineers, or hold the degree of B.Sc. in Electrical Engineering or equivalent qualifications which exempt from the Graduateship examination of the Institution of Electrical Engineers. Applicants must be between the ages of 25 and 35 years.

The salaries attached to the positions are:

(*a*) A maximum of £875 per annum dependent upon qualifications and experience, for one position.

(*b*) A salary range of £425-£785 per annum dependent upon qualifications and experience, for two positions.

Applicants should have had training in the Signal Department of a British Railway Company or Signal Equipment Manufacturing Company. Experience in design and construction of A.C. and D.C. power signalling, preferably including relay interlocking as well as power frame installation, and be capable of designing circuits for such work. Some experience of railways operated by electric traction is also desirable.

Further details regarding these appointments and conditions in New Zealand, together with application forms, may be obtained from the office of the High Commissioner for New Zealand, 415, Strand, London, W.C.2, and applications, *in triplicate*, together with copies of testimonials also *in triplicate*, will be received by the High Commissioner for New Zealand not later than October 23, 1948.

Sudan Government

SUDAN RAILWAYS require a District Traffic Manager for service in the Sudan. Applicants must have been educated to at least Higher Schools Certificate standard and should have had traffic experience on a British railway, preferably as a special trainee; or should have served in the Traffic Department of a railway overseas. Age not over 35. Long-term contract for twelve years in the scale £E.480-£E.936 with eligibility for gratuity of £E.4,000. Alternatively, Provident Fund contract for seven years, or such longer period as will bring the candidate to the age of 38, in the scale £E.560-£E.1,100, with customary contributions and benefits. Under both contracts there is a two years probation, there is a cost-of-living allowance from £E.180 to £E.390, according to the number of dependants, and starting rate is according to age, qualification, and experience. Outfit allowance £E.60 provided starting rate does not exceed £E.600 long term or £E.700 Provident Fund contract. There is at present *no income tax* in the Sudan. Strict medical examination. Application form and further particulars from SUDAN AGENT IN LONDON, Wellington House, Buckingham Gate, London, S.W.1. Please mark envelope "District Traffic Manager."

STANDARD MILITARY RAILWAY BRIDGES. By F. S. Bond. A description of the different types of bridges designed for rapid erection in the field by the Allied Forces, and of the various methods emoloyed in such erection. 28 pages. 9 in. by 12 in.; fully illustrated. Paper cover, 5*s*. *By post* 5*s*. 2*d*.

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discussion of prize essay; February 17: "Gas Jets and Gas Turbines for Railway Traction" (Mr. A. W. J. Dymond); March 3: to be announced (Mr. Miles Beevor, Chief Secretary & Legal Adviser, British Transport Commission); March 17: annual general meeting and young men's discussion.

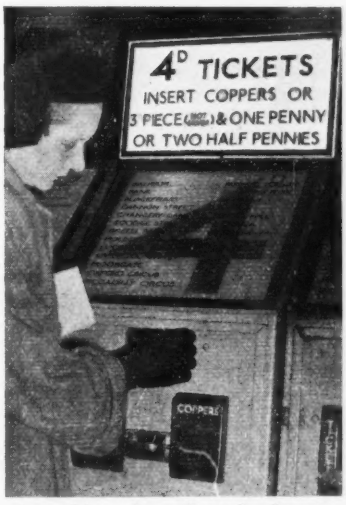
London Midland Region Canteen Cook Stars in Play.—A girl who has never acted before will be among the cast in the British Railways (London Midland Region) Dramatic Society's production of "See How They Run" at King George's Hall, London, W.C.1, on October 1 and 2. She is Miss Eileen McCarthy, 24-year-old cook at the L.M.R. canteen, Broad Street, E.C.3.

London Midland Launch.—The m.v. *Cambria* was launched at Harland & Wolff's yard at Belfast on Tuesday by Lady Wood. Those present at the launching ceremony included Sir William Wood, K.B.E., Mr. and Mrs. G. Morton, Mr. and Mrs. O. H. Corble, Captain and Mrs. W. L. Sinclair, Mr. H. L. Smedley, Mr. A. J. Pearson, Mr. R. Bagwell, Mr. J. O'Neill, Mr. and Mrs. L. Hughes, Captain and Mrs. K. N. Mackenzie, Mr. and Mrs. W. B. Shelton, Mr. and Mrs. F. H. Fisher, and Mr. Handy.

Leyland Trucks in Ireland.—Fast night newspaper delivery services are being operated in Eire by a fleet of 15 Comet diesel engine trucks supplied by Leyland Motors Limited. These have replaced petrol engine trucks which failed to stand the constant strain. These new trucks, operated by Coras Iompair Eireann, maintain nightly services from Dublin to Cork, 160 miles; Dublin to Limerick, 122 miles; Dublin to Galway, 133 miles; and Dublin to Sligo, 135 miles, at an average speed, including stopping time, of 25 m.p.h. or more. In covering 1,000 miles a week each at high speed, fuel-oil consumption of the Comets averaged slightly better than 18 miles a gal., while lubricating-oil consumption during a typical week averaged 1,163 miles a gal.

Reductions in United Kingdom Air Fares.—Reduced fares on some British European Airways United Kingdom services will come into operation from October 3 inclusive. Among examples given by the British European Airways Corporation are the monthly return fares from London to Glasgow and London to Edinburgh, reduced to £11 from £14 5s. in each case. Other examples, also relating to monthly return fares, are: London—Inverness, £15 18s. (reduced from £20); and Manchester—Belfast, £5 10s. (reduced from £7 16s). It is stated that passengers who have already paid at the existing rates for journeys to be undertaken on or after October 3 will have the differences refunded. Some further reference to these reduced fares, and to their comparison with railway charges, is made in an editorial note in this issue.

New London Transport Slot Machine.—London Transport has installed at the Oval underground station what is believed to be the first slot machine to take bronze threepenny pieces. The new machine, an experimental one, takes a threepenny piece and a penny and issues a 4d. ticket. It will also take four pennies. The reason for the development is that London Transport has found that its slot machines issuing 4d. and 5d. tickets are comparatively lightly used because of the shortage of coppers. Two hundred people used the machine in the rush-hour in one morning. If the experiment proves a success, it will be extended to 4d. and 5d. ticket machines at other stations.



A machine adapted to take the new bronze threepenny bit has been installed by London Transport at Oval Station

Associated Electrical Industries.—The directors of Associated Electrical Industries Limited announce the payment on October 12 of an interim dividend of 5 per cent., less tax, on the ordinary stock of the company on account of the year 1948.

Order for Rails for Argentina—The Argentine Government, through its purchasing commission in London, has placed an order valued at £6,000,000 with British rail makers for 250,000 tons of steel rails and fishplates, to be delivered over six years.

New C.P.R. Rolling Stock.—Between July 20 and August 19 the Canadian Pacific Railway received four G-5-d class locomotives from the Canadian Locomotive Company, completing an order for thirty. Also received was one G-3-j class locomotive from the Montreal Locomotive Works, completing an order for ten, and 132 50-ton tank refrigerator cars from the National Steel Car Corporation, bringing to 328 the number received on an order for 500 cars of this type.

Canadian Transport Inquiry. — The Canadian Government has decided to appoint a commission under the Public Inquiries Act to investigate and report on the questions of economic policy involved in the operation and maintenance of the national transport system. The need for such an investigation has emerged from the controversy created by the recent decision of the Board of Transport commissioners authorising an increase in railway freight rates, which has been opposed strongly by the maritime and western provinces.

Success of Steel Scrap Campaign.—Speaking at a press conference in Edinburgh recently, Mr. G. R. Strauss, Minister of Supply, said that the collection of industrial scrap had averaged 20,000 tons a week for the past six months. It was hoped that by this campaign the industry would bridge the gap until it

could build up supplies from other sources. By 1952 we should not require any imports of scrap at all. Schemes exceeding £11 million had been approved for the Scottish steel industry, and 48 schemes, costing £400,000, also have been sanctioned for the modernisation and development of iron foundries.

Temiscouata Railway Results.—Gross earnings of the Temiscouata Railway, Canada, for the month ended July 31 were $58,030, against $38.219 in July, 1947, and operating expenses $50,153, against $35,929.

North British Locomotive Order for Victoria.—Last week we reported briefly that the North British Locomotive Co. Ltd. had received an order to build 50 locomotives for the Victorian Railways in 1950. Work on this £1,000,000 order will commence early in that year and will keep 2,400 men employed for six months. The principal particulars of the locomotives are as follow:—

Cylinders (2)	20 in. dia. × 26 in. stroke
Valve gear	Walschaerts
Working pressure	175 lb. per sq. in.
Tractive effort at 85 per cent. working pressure	28,648 lb.
Dia. of coupled wheels	4 ft. 7⅞ in.
Dia. of carrying wheels	3 ft. 1⅞ in.
Wheelbase, engine	30 ft. 9 in.
Wheelbase, coupled	15 ft. 6 in.
Wheelbase, engine and tender, total	57 ft. 11⅛ in.
Weight on drivers	54½ tons
Total weight on engine	76 tons
Total weight of tender	48¾ tons

The locomotives, which will have 2-8-2 wheel arrangement with double bogie tenders, are to be designated "N" class, and will be used for freight services on 5 ft. 3 in. gauge track. Provision will be made, however, to convert them to standard gauge when required.

Forthcoming Meetings

September 25 (*Sat.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to F. A. Secrett Limited, Intensive Cultivation Farm, Milford, Surrey.

September 25 (*Sat.*).—The Permanent Way Institution, London Section; demonstration of A.T.C. apparatus in the Western Region, British Railways.

September 28 (*Tues.*).—Metropolitan Graduate and Student Society, at 80, Portland Place, London, W.1. "The Functions of the Ministry of Transport," by H. Emery.

September 30 (*Thur.*).—Institute of Traffic Administration, North East Coast Section, at the County Hotel, Neville Street, Newcastle-on-Tyne, 1, at 7 p.m. Debate to be opened by Mr. R. Dryden, on "The Future Position of Transport under Nationalisation."

October 2 (*Sat.*).—Electric Railway Society, at the Fred Tallant Hall, Drummond Street, London, N.W.1, at 3 p.m. "The L.N.W.R. Electrification," by Mr. F. G. B. Atkinson.

October 2 (*Sat.*).—Doncaster Engineering Society, at the Technical College Hall, Doncaster, at 7 p.m. "Some Unusual Railways of Great Britain," by Mr. R. Shephard.

October 2 (*Sat.*).—British Railways, Southern Region, Lecture & Debating Society. Visit to the National Physical Laboratory, Teddington.

October 4 (*Mon.*).—Institute of Transport, Metropolitan Section, at Livingstone House, Broadway, London, S.W.1, at 5.30 p.m. "Efficiency Control in Large Transport Undertakings," by Sir William Wood.

Railway Stock Market

The belief that a critical stage has been reached in international affairs has restrained stock markets, and small declines ruled in most sections, a notable exception being aircraft shares, which recorded an all-round rise. British Funds were unable to move against the general market trend and lost part of earlier strength. War Loan 3½ per cent. encountered selling, as did Savings and National War Bonds, but nationalisation stocks continued to find support. Transport 3 per cent. changed hands actively around 99¼, and 3 per cent. "Wagon" stock further strengthened to 100$\frac{11}{16}$. Many investors are taking the view that a yield of approximately 3 per cent. on these stocks is preferable to yields of 4½ per cent. offered by leading industrial shares. Disclosure of encouraging progress in export markets has failed to help market sentiment largely because efforts on an even larger scale will be necessary. In more settled conditions, the big success of the Imperial Chemical issue of 10,093,023 shares at 40s. 6d. would have stimulated markets. Including "excess" shares, nearly 21,000,000 were applied for.

Road Transport shares remained active, buyers being attracted by latest market estimates of "break-up" values, though too much importance should not be attached to these calculations. It cannot be assumed that compensation for other concerns will be on a similar basis as that secured by Thomas Tilling. It is expected that Tillings will shortly make a statement indicating how it is proposed to deal with the £24,800,000 to be received from the B.T.C. The market is assuming that a substantial return of capital is likely, but that remaining assets will be used to extend the business in new directions. In active dealings Tillings have risen further to 116s. 9d., compared with 113s. 6d. a week ago. Turnover in B.E.T. deferred stock was the largest in its history, and, stimulated by unofficial estimates of the "break-up" value, placed as high as £3,000 in some quarters. As compared with a week ago the price has soared further from £1,860 to £1,950.

There was no excitement in the foreign railway market, but Brazil rails continued to attract attention, notably Great Western of Brazil, which have advanced to 107s. on the news that the question of expropriation is being considered by the Brazilian authorities. San Paulo, recently touching 175, moved lower at 169, some profit-taking having followed the view that actual distribution of money received for "recognised capital" may not be possible for some time. Debenture and preference stocks will be repaid, but more than £100 per ordinary stock may depend on the outcome of negotiations, which may not be decided until next year. Estimates that San Paulo ordinary may eventually be worth at least £200 remain current. Leopoldina ordinary was 11½, the preference stock 36½, the 4 per cent. debentures 69, and Leopoldina Terminal debentures 65. Manila Railway "A" debentures eased to 85, and Central and other Uruguayan rails were steady, but elsewhere United of Havana 1906 debentures eased to 16. Canadian Pacifics were lower at 22, and Beira Railway bearer shares 62s. 6d., but in other directions losses of a point were shown by French railway sterling bonds. Antofagasta ordinary was steady at 10½, with the preference stock at 63½. Iron and steel shares were inclined to attract attention because of the favourable yields, Guest Keen, United Steel, and Dorman Long all making small gains. In other directions Charles Roberts were £7½, Wagon Repairs 5s. shares 21s. 3d., Beyer Peacock 22s. 6d., North British Locomotive 23s. 7½d., and Vulcan Foundry 28s.

Traffic Table of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffics for week: Total this year	Traffics for week: Inc. or dec. compared with 1946/47	No. of week	Aggregate traffics to date: Total 1947/8	Aggregate traffics to date: Increase or decrease
South & Central America	Antofagasta	811	12.9.48	£ 54,080	+ £ 8,418	37	£ 1,953,120	+ £ 420,406
	Bolivar	174	July, 1948	$28,960	− $69,357	30	$471,287	− $301,893
	Brazil	—	—	—	—	—	—	—
	Cent. Uruguay ...	970	11.9.48	29,569	+ 3,358	10	336,920	− 10,053
	Costa Rica	281	July, 1948	41,632	+ 8,774	4	41,632	+ 8,774
	Dorada	70	July, 1948	33,466	+ 466	30	175,666	− 37,134
	G.W. of Brazil ...	1,040	11.9.48	27,400	− 500	36	1,161,700	+ 11,400
	Inter. Ctl. Amer. ...	794	July, 1948	$120,123	− $81,936	30	$1,095,789	− $796,960
	La Guaira	22¼	Aug, 1948	$95,776	− $1,298	35	$837,334	− $44,900
	Leopoldina	1,920	11.9.48	63,136	− 8,600	36	2,033,574	− 395,078
	Midland Uruguay ...	319	Aug, 1948	22,288	+ 5,183	8	45,295	+ 11,146
	Nitrate	382	15.9.48	15,796	+ 6,684	37	217,812	+ 53,500
	N.W. of Uruguay ...	113	July, 1948	5,229	+ 1,766	4	5,229	+ 1,766
	Paraguay Cent. ...	274	10.9.48	G105,089	+ G43,406	10	G1,040,044	+ G545,244
	Peru Corp.	1,059	Aug, 1948	172,239	+ 2,746	9	351,181	+ 18,998
	Salvador	100	June, 1948	c121,000	+ c30,000	52	c2,020,600	+ c321,600
	San Paulo	153½	—	—	—	—	—	—
	Taltal	156	Aug, 1948	5,495	+ 75	9	15,505	+ 4,500
	United of Havana ...	1,301	11.9.48	37,180	− 24,574	10	474,227	− 188,216
	Uruguay Northern	73	Aug, 1948	935	− 105	8	2,105	− 72
Canada	Canadian National ...	23,473	July, 1948	10,450,250	+ 943,000	30	67,566,250	+ 4,998,750
	Canadian Pacific ...	17,037	July, 1948	7,454,250	+ 524,000	30	47,661,750	+ 3,025,250
Various	Barsi Light†	202	Aug, 1948	22,485	− 3,832	22	136,492	− 4,155
	Beira...	204	June, 1948	112,390	+ 12,957	38	1,048,644	+ 219,747
	Egyptian Delta ...	607	31.7.48	18,074	+ 1,604	15	212,706	+ 16,422
	Gold Coast	536	July, 1948	201,177	+ 49,765	17	867,019	+ 239,844
	Manila	—	—	—	—	—	—	—
	Mid. of W. Australia	277	July, 1948	23,987	+ 4,505	4	23,987	+ 4,505
	Nigeria	1,900	June, 1948	403,138	+ 91,614	13	1,292,292	+ 249,560
	Rhodesia	2,445	Sept., 1947	643,980	+ 102,833	52	6,787,603	+ 612,938
	South Africa ...	13,347	28.8.48	1,359,087	+ 133,749	21	28,361,646	+ 1,702,440
	Victoria	4,774	May., 1948	1,439,718	+ 456,084	48	—	—

† Receipts are calculated @ 1s. 6d. to the rupee